

EXHIBIT 45

Rebecca Smith-Bindman, M.D.

Page 245

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

IN RE: JOHNSON & JOHNSON TALCUM
POWDER PRODUCTS MARKETING, SALES
PRACTICES, AND PRODUCTS LIABILITY
LITIGATION

)
)
)
)
)
) MDL No.
) 2738 (FLW)(LHG)
)
)

VIDEOTAPED DEPOSITION OF
REBECCA SMITH-BINDMAN, M.D.
San Francisco, California
Friday, February 8, 2019
Volume II

Reported by:
MARY J. GOFF
CSR No. 13427

Rebecca Smith-Bindman, M.D.

Page 246	Page 248
<p>1 2 3 4 5 Videotaped Deposition of REBECCA 6 SMITH-BINDMAN, M.D., Volume II, taken on behalf of 7 Johnson & Johnson, at Levin Simes Abrams LLP, 8 1700 Montgomery Street, Suite 250, San Francisco, 9 California 94111, beginning at 9:26 a.m. and ending 10 at 12:48 p.m., on February 8, 2019, before MARY J. 11 GOFF, California Certified Shorthand Reporter No. 12 13427. 13 14 15 16 17 18 19 20 21 22 23 24 25</p>	<p>1 APPEARANCES (continued): 2 3 For Defendant Johnson & Johnson 4 Tucker Ellis LLP 5 BY: MICHAEL C. ZELLERS 6 Attorney at Law 7 515 South Flower Street 8 42nd Floor 9 Los Angeles, California 90071 10 michael.zellers@tuckerellis.com 11 213-430-3301 12 13 14 For Defendant Johnson & Johnson 15 Skadden, Arps, Slate, Meagher & Flom, LLP. 16 BY: BENJAMIN HALPERIN 17 Attorney at Law 18 4 Times Square 19 New York, New York 10036 20 benjamin.halperin@skadden.com 21 212-735-2453 22 23 24 25</p>
Page 247	Page 249
<p>1 APPEARANCES: 2 3 For Plaintiffs 4 Beasley Allen Law Firm 5 BY: P. LEIGH O'DELL 6 MARGARET M. THOMPSON, MD, JD, MPAff 7 Attorney at Law 8 218 Commerce Street 9 Montgomery, Alabama 36103 10 leigh.odell@beasleyallen.com 11 334-269-2343 12 For Plaintiffs 13 Robinson Calcagnie, Inc. 14 BY: CYNTHIA L. GARBER 15 Attorney at Law 16 19 Corporate Plaza Drive 17 Newport Beach, California 92660 18 cgarber@robinsonfirm.com 19 For Plaintiffs 20 Wilentz, Goldman & Spitzer P.A. 21 Daniel R. Lapinski 22 Attorney at Law 23 90 Woodbridge Center Drive, 24 Suite 900 Box 10 25 Woodbridge, New Jersey 07095-0958</p>	<p>1 APPEARANCE (continued): 2 For Defendant Imerys 3 Dykema 4 BY: JANE BOCKUS 5 Attorney at Law 6 112 E. Pecan Street 7 Suite 1800 8 San Antonio, Texas 78205 9 jbockus@dykema.com 10 210-554-5549 11 12 For Defendant Imerys 13 Gordon & Rees LLP 14 BY: JENNIFER A. FOSTER 15 Attorney at Law 16 816 Congress Avenue 17 Suite 1510 18 Austin, Texas 78701 19 jfooster@gordonrees.com 20 512-391-0197 21 22 23 24 25</p>

2 (Pages 246 to 249)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 250</p> <p>1 APPEARANCES (continued): 2 For Defendant PCPC, Personal Care Products Council 3 Seyfarth Shaw, LLP 4 BY: JAMES R. BILLINGS-KANG 5 Attorney at Law 6 975 F Street, NW 7 Washington, D.C. 20004 8 jbillingskang@seyfarth.com 9 202-828-5356 10 11 12 13 14 For Defendants PTI Union, LLC and PTI Royston, LLC 15 Tucker Ellis LLP 16 BY: CAROLINE M. TINSLEY 17 Attorney at Law 18 100 South 4th Street 19 Suite 600 20 St. Louis, Missouri, 63102 21 caroline.tinsley@tuckerellis.com 22 23 Videographer: 24 Andrew Graves 25</p>	<p style="text-align: right;">Page 252</p> <p>1 EXHIBITS CONTINUED: PAGE 2 Exhibit 34 Does Exposure to Asbestos Cause 324 Ovarian Cancer article 3 4 Exhibit 35 Occupational Exposure to Asbestos 327 article 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</p>
<p style="text-align: right;">Page 251</p> <p>1 INDEX 2 WITNESS EXAMINATION 3 REBECCA SMITH-BINDMAN, M.D. 4 Volume II 5 6 BY MR. ZELLERS 254, 372 7 BY MS. O'DELL 354 8 BY MR. BILLINGS-KANG 347 9 BY MS. BOCKUS 331, 369 10 11 NUMBER DESCRIPTION PAGE 12 Exhibit 28 6/1/17 Letter, Invoice 259 13 14 Exhibit 29 Bill, Invoice 147 261 15 16 17 Exhibit 30 Perineal Use of Talc and Risk 276 of Ovarian Cancer article 18 19 20 Exhibit 31 Influence of Aspirin and nonaspirin 297 NSAID Use article 21 22 Exhibit 32 Article, Talc 317 23 24 Exhibit 33 Invoice, Tachibana, UCSF, 10/18 319 25</p>	<p style="text-align: right;">Page 253</p> <p>1 San Francisco, California 2 February 8, 2019 3 9:26 a.m. 4 5 THE VIDEOGRAPHER: We are now on the 6 record. My name is Andrew Graves. I'm a 7 videographer for Golkow Litigation Services. 8 Today's date is February 8, 2019. The time is 9 9:26 a.m. 10 11 This video deposition is being held at 12 1700 Montgomery Street, Suite 250, San Francisco, 13 California, In the Matter of In Re: Johnson & 14 Johnson Talcum Powder Products Marketing, Sales 15 Practices, and Products Liability Litigation, for 16 the United States District Court, District of New Jersey. 17 The deponent is Rebecca Smith-Bindman, 18 Ph.D., Volume II. 19 Would counsel please identify yourselves. 20 MR. ZELLERS: Can we waive that since we 21 were all here yesterday? 22 THE VIDEOGRAPHER: Okay. The court 23 reporter is Mary Goff, and she will now swear in the 24 witness. 25</p>

3 (Pages 250 to 253)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 254</p> <p>1 REBECCA SMITH-BINDMAN, M.D., VOLUME II, 2 being first duly sworn or affirmed to testify to the 3 truth, the whole truth, and nothing but the truth, 4 was examined and testified as follows: 5 EXAMINATION BY COUNSEL FOR THE DEFENDANTS 6 BY MR. ZELLERS: 7 Q Good morning. 8 A Good morning. 9 Q Dr. Smith-Bindman, did you do anything to 10 prepare -- or further prepare for your deposition 11 since the time we concluded yesterday and this 12 morning? 13 A I did two things. I reviewed my report 14 again, and I called the biostatistician who worked 15 on my meta-analysis to review a few of the details. 16 Q You called Dr. Hall? 17 A I did. 18 Q When was the last time that you had talked 19 with Dr. Hall before yesterday? 20 A Speaking to her at the time of -- that she 21 did the analysis. And I -- I think there was an 22 e-mail or two over the last several weeks asking for 23 her CV or something like that, but not any 24 meaningful conversation. 25 Q Have you produced the e-mails -- the</p>	<p style="text-align: right;">Page 256</p> <p>1 manuscript. 2 I was quite surprised that they weren't 3 exactly the same. They were not meaningfully 4 different, but there was a very slight shift in 5 the ones that are in my report. 6 I mean, I asked Dr. Jane why that was the 7 case. And in fact, the numbers are calculated using 8 the standard errors in the confidence intervals and 9 the sample size which very slightly shifts it from 10 the reported numbers. 11 So you were correct when you said the 12 numbers are not exactly the same, and she explained 13 that that's why that's the case. 14 Q Are the numbers that were contained in 15 Figure -- Figures 2 and 3 in your report, estimates? 16 MS. O'DELL: Object to the form. 17 A The numbers are calculated. So I -- I 18 think by that, you mean estimates. 19 Q (BY MR. ZELLERS) Did you do the 20 calculations? 21 A No. She -- she did them. 22 Q Do we -- 23 THE COURT REPORTER: Can you raise your 24 voice for me, please? 25 A Yes, I can. I apologize.</p>
<p style="text-align: right;">Page 255</p> <p>1 recent e-mails with Dr. Hall? 2 A I -- I'm not sure if I produced the one 3 asking for her CV, but the -- and actually, I don't 4 remember when I asked her for that. I might have 5 presented -- 6 MS. O'DELL: I think that's part of the 7 production -- 8 Q (BY MR. ZELLERS) How -- 9 MS. O'DELL: -- but -- excuse me. 10 Q (BY MR. ZELLERS) How long did you speak 11 with Dr. Hall yesterday? 12 A About 15 -- 10-15 minutes. 13 Q Did you make any written notes? 14 A I -- I think I scribbled in my usual 15 scribble place. 16 Q What notes did you make from your 17 conversation with Dr. Hall yesterday after the first 18 session of your deposition? 19 A So -- so I did -- I did -- I did jot some 20 notes on my meta-analysis. But mostly I asked her 21 to clarify how she did the calculations of the 22 numbers that are shown in the figures. 23 I was struggling to understand why the 24 numbers and the figures were not exactly the same as 25 the ones that you showed me in the published</p>	<p style="text-align: right;">Page 257</p> <p>1 Q (BY MR. ZELLERS) Do we have her work 2 product as to the calculations that were made? 3 A In the documents that I shared, she 4 specified the -- the software that she used, the 5 program that she used. 6 In fact, the way of estimating it, it's 7 actually in my report as well. And so yes, it's 8 explained there, and it's in all of the documents 9 that I shared with you. 10 Q Her calculations are contained in the 11 documents that are shared; is that right? 12 A Yes. 13 Q The numbers that you got from the Terry 14 study, those came from the Terry publication; is 15 that right? 16 A Yes. 17 Q Any additional notes you made from your 18 discussion with Dr. Hall, other than what you have 19 generally told us about? 20 A No. Just that. 21 Q The notes that you added to your annotated 22 report from your discussion with Dr. Hall, which we 23 marked as Exhibit 17, those notes are on which page 24 or pages? 25 A Page 33 and 34.</p>

4 (Pages 254 to 257)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 258</p> <p>1 Q It looks like you made those notes in an 2 aqua pen is -- is that right, or -- 3 A Yes. 4 Q -- I -- 5 A Yes. 6 Q Okay. 7 A Yes, absolutely. 8 Q Any -- 9 A I would say teal, but... 10 Q Well, I think you're probably more correct 11 than I am. 12 Any other notes that you had from your 13 discussion with Dr. Hall? 14 A No. 15 Q Any other communications that you had with 16 Dr. Hall, other than your 10- or 15-minute phone 17 conversation yesterday afternoon or evening? 18 A No. 19 Q Did you communicate with Dr. Hall via 20 e-mail or any way other than just the phone call? 21 A No. 22 Q Did you communicate with anyone else 23 between the time we finished yesterday and this 24 morning about the subject matter that we're here to 25 talk about?</p>	<p style="text-align: right;">Page 260</p> <p>1 Q What do you -- well, I will take that as a 2 yes, that at least through November 13, 2018, that 3 Deposition Exhibit 28 are all of your invoices -- 4 A Yeah. 5 Q -- is that right? 6 A Yes. 7 Q Those invoices total approximately 8 160 hours. Does that sound right? 9 A 160? 10 Q 160. 11 A I'm -- I'm going to believe you. 12 Q Well, and anyone can go and check my math. 13 How many hours do you estimate that you 14 have spent up until today on this matter both doing 15 additional work, reviewing those additional studies 16 and materials we talked about yesterday, preparing 17 for the deposition, meeting with counsel for 18 Plaintiffs? 19 MS. O'DELL: Since the last invoice? 20 MR. ZELLERS: Since the last invoice is 21 what I had intended to ask. 22 MS. O'DELL: Yeah. Thank you. 23 A I -- I think approximately 25 hours. 24 Q (BY MR. ZELLERS) In addition, we were 25 provided with a two-page exhibit which are two</p>
<p style="text-align: right;">Page 259</p> <p>1 A No. 2 Q At the start of the session today, counsel 3 for Plaintiffs, Ms. O'Dell, provided me with copies 4 of your invoices. 5 I'm going to hand you what we have marked 6 as Exhibit 28. It is a five-page exhibit. 7 The first page is a cover letter. It 8 looks like an engagement or general engagement 9 letter from you to -- you say Mr. Carmen Scott. 10 Is it a Ms. Carmen Scott? 11 (Exhibit 28 was marked for identification 12 and is attached to the transcript.) 13 A It is. 14 Q All right. That was on June 1 of 2017. 15 The last invoice is November 13 of 2018; is that 16 right? 17 A I'm sorry. What was the question? Is 18 this -- 19 Q The question is: Are those all of our 20 invoices that you have generated thus far in the 21 talcum powder MDL litigation? 22 A I -- I think I mentioned that there are -- 23 I haven't submitted anything beyond this, but that 24 there are additional hours that I recorded after 25 this.</p>	<p style="text-align: right;">Page 261</p> <p>1 invoices from Jane Hall, which total around \$3,000. 2 (Exhibit 29 was marked for identification 3 and is attached to the transcript.) 4 Q (BY MR. ZELLERS) Can you look at 5 Exhibit 29 and verify for us that those are the 6 e-mails -- strike that -- that those are the 7 invoices for the work that was done by Dr. Hall? 8 A I -- I -- I believe so. 9 Q Are you aware of any additional invoices 10 beyond that? 11 A I'm not. 12 Q Do you have any invoices from your copy 13 editor, Ms. Tachibana? 14 A She sent me an invoice, which I forwarded 15 to counsel. 16 Q All right. How much was that invoice for? 17 A I think it was about \$1,500. 18 Q How much an hour does Ms. Tachibana 19 charge? 20 A I think it's about a hundred dollars an 21 hour. 22 Q Was that for all of the work that she did 23 with respect to your report? 24 A Yes. There was no other work other than 25 that 15 -- it might have been \$1,700.</p>

5 (Pages 258 to 261)

Rebecca Smith-Bindman, M.D.

Page 262	Page 264
<p>1 MS. O'DELL: Excuse me. I'm sorry, Mike. 2 I apologize for not copying that. We're going to 3 make a copy, and I will provide it to your 4 momentarily at -- 5 MR. ZELLERS: Very good. We'll mark it 6 before the conclusion of the deposition. Thank you. 7 Q (BY MR. ZELLERS) Do you have your report 8 in front of you? You can use your annotated 9 version, No. -- Exhibit 17. We also marked your 10 report as Exhibit 2. 11 A Yes. 12 Q Do you have that in front of you? 13 A I do. 14 Q Go to page 17, if you will, please. 15 MR. LAPINSKI: Counsel, you said page 17? 16 MR. ZELLERS: Yes, page 17. 17 A Yes. 18 Q (BY MR. ZELLERS) On page 17, you make a 19 number of general statements about the advantages 20 and disadvantages of case control and cohort 21 studies; is that right? 22 A Yes. 23 Q There are no citations there. Is this 24 based and those statements based on your general 25 knowledge?</p>	<p>1 paragraph, Mike? I have lost track. 2 MR. ZELLERS: I was asking about the 3 specific statement in the middle paragraph of 4 page 17 relating to cohort studies and the 5 limitation that they rarely focus on a single 6 narrowly defined question. 7 MS. O'DELL: Yes. Thank you. 8 Q (BY MR. ZELLERS) But my question now is -- 9 A Yes. 10 Q -- whether or not Dr. Smith-Bindman, as 11 you sit here, can cite any published literature that 12 states the cohort studies are unlikely to detect a 13 real association -- or unlikely to detect real 14 associations for this reason. 15 A I -- 16 MS. O'DELL: Excuse me. Are you 17 quoting -- when you say "unlikely to detect real 18 associations for this reason," is that reading -- 19 are you reading from her report or is that just -- 20 MR. ZELLERS: No. That's my question. 21 MS. O'DELL: -- okay. Sorry. 22 MR. ZELLERS: And if it's not very 23 articulate -- 24 A I -- I think cohort -- cohort studies are 25 able to detect real associations, if they ask about</p>
Page 263	Page 265
<p>1 A Yes. This is based on Epi 101, sort of... 2 Q You make a statement in the middle 3 paragraph on page 17 where you talk about "cohort 4 studies." 5 And you state that they rarely focus on a 6 single narrowly defined question and that that's an 7 important limitation of cohort studies. 8 Do you see that? 9 A I do. 10 Q Can you cite to any other epidemiologists 11 who agree with you on that point? 12 A So it's very well known the cost of doing 13 a cohort study is often very large, and so the topic 14 that's often the central focus of the cohort study 15 is very, very well done. 16 It's the ancillary topics that often get 17 short shrift. And so that -- I -- I could probably 18 find this explained in any basic textbook. 19 And -- and I -- I apologize for not citing 20 it. This is sort of just very well-known general 21 concepts of study design. 22 Q Can you cite to any published literature 23 that states that cohort studies are unlikely to 24 detect real associations for this reason? 25 MS. O'DELL: Are you reading a particular</p>	<p>1 those associations. 2 If they don't ask about it, then it 3 can't -- then -- then it doesn't have an ability to 4 measure it. 5 So what I am saying here is that cohort 6 studies don't have the capacity to go in depth and 7 ask. 8 I think all of the cohort studies that I 9 reviewed for -- for this review discuss the lack of 10 detail in the cohort question, meaning that it's not 11 that the study design was the problem. It was that 12 they just didn't have the right predictor 13 information being assessed. 14 Q Despite this limitation -- or in your 15 view, limitation of cohort studies, you did include 16 the Gertig 2000 cohort study in your systematic 17 review; is that right? 18 A I did. I just want to clarify the answer. 19 Cohort studies are a very strong study design that I 20 like very much and that I have used and currently 21 I'm -- I'm using in study designs. 22 It's rather if the study design uses a 23 cohort, which is a good design, doesn't have enough 24 detail, because that's not the focus, that 25 doesn't -- it can't be used to answer other</p>

6 (Pages 262 to 265)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 266</p> <p>1 questions easily.</p> <p>2 So I think in general I like cohort</p> <p>3 designs very much, and I think it's a very powerful</p> <p>4 study design. But if you haven't asked the right</p> <p>5 questions, it's hard to the expand it.</p> <p>6 So I did -- I read all of the cohorts on</p> <p>7 this topic.</p> <p>8 Q And you concluded that the Gertig cohort</p> <p>9 study, you know, asked the right information or had</p> <p>10 sufficient information for you to include it both in</p> <p>11 your general systematic review and in your more</p> <p>12 focused systematic review which you set forth as</p> <p>13 Figures 2 and 3 in your report, correct?</p> <p>14 A That's correct. That -- those -- those</p> <p>15 were looking at regular use, and I thought the</p> <p>16 Gertig was the cohort that allowed me to understand</p> <p>17 regular use of perineal talc.</p> <p>18 Q Gertig was based on the Nurses' Health</p> <p>19 Study; is that right?</p> <p>20 A Yes.</p> <p>21 Q Gertig and the authors do recognize that</p> <p>22 the biologic evidence for the association of talc</p> <p>23 and ovarian cancer is incomplete, correct?</p> <p>24 MS. O'DELL: Object to the form.</p> <p>25 A I -- I don't have it in front of me, but</p>	<p style="text-align: right;">Page 268</p> <p>1 yet they didn't report it that way.</p> <p>2 They only reported on any exposure to talc</p> <p>3 powder products. And that is a very vague</p> <p>4 definition as opposed to the frequency of use.</p> <p>5 And for that reason, I couldn't tell in --</p> <p>6 in nearly the same detail as I could for the earlier</p> <p>7 study, the -- the exposure. They just chose not to</p> <p>8 present it that way.</p> <p>9 Q The Gates 2010 cohort study did include</p> <p>10 over a hundred thousand women; is that right?</p> <p>11 A The Gates?</p> <p>12 Q Yes.</p> <p>13 A It was large, but I need to check the</p> <p>14 actual numbers.</p> <p>15 Q Here. Let me hand it to --</p> <p>16 A I have it. I have it.</p> <p>17 Q Do you have it?</p> <p>18 A Yeah.</p> <p>19 Q Okay. And I am looking at page 47. And</p> <p>20 it's quoting the Nurses' Health Study as involving</p> <p>21 close to 109,000 --</p> <p>22 A I'm not sure.</p> <p>23 Q -- women?</p> <p>24 A I'm not sure. I'm looking at the -- the</p> <p>25 Gates -- are you asking about Gates or Gertig?</p>
<p style="text-align: right;">Page 267</p> <p>1 it may be that they reported as of 2000, they didn't</p> <p>2 have evidence of the biologic mechanism. I --</p> <p>3 Q And I will ask you about biologic</p> <p>4 mechanism before we conclude here today.</p> <p>5 You did not, though -- well, let me</p> <p>6 withdraw that.</p> <p>7 There was a follow-up cohort study to</p> <p>8 Gertig 2000, and that was the Gates 2010 cohort</p> <p>9 study; is that right?</p> <p>10 A Yes.</p> <p>11 Q That had a longer follow-up than Gertig;</p> <p>12 is that right?</p> <p>13 A Yes.</p> <p>14 Q It was an analysis of the data collected</p> <p>15 in the Nurses' Health Study; is that right?</p> <p>16 MS. O'DELL: Object to the form.</p> <p>17 A It was analysis of some of the data</p> <p>18 collected in the -- in the Nurses' Health Study, but</p> <p>19 they did not report the variable in such a way that</p> <p>20 would allow you to understand or to quantify the</p> <p>21 exposure as opposed to the first cohort study which</p> <p>22 did.</p> <p>23 So the latter study, they -- they had the</p> <p>24 data, which is why I'm answering it this way. They</p> <p>25 clearly had it, because the data hadn't change, and</p>	<p style="text-align: right;">Page 269</p> <p>1 Q I'm asking about Gates 2010.</p> <p>2 A In mine it says \$221,000 woman with 924</p> <p>3 epithelial ovarian cancer.</p> <p>4 Am I looking in the wrong place?</p> <p>5 Q No. I -- and then if you look further, it</p> <p>6 talks about -- at least in the Nurses' Health Study,</p> <p>7 there being 108,870 women; is that right?</p> <p>8 A Yes.</p> <p>9 Q The women in the national health study,</p> <p>10 which was the basis for both the Gertig 2000 cohort</p> <p>11 study and Gates 2010 cohort study, those women were</p> <p>12 followed from 1976 to 2006, so for 30 years --</p> <p>13 A Yes.</p> <p>14 Q -- is that right?</p> <p>15 A Yes.</p> <p>16 Q And -- and after following these hundred</p> <p>17 thousand women -- or over hundred thousand women for</p> <p>18 three decades, the authors in Gates 2010 concluded</p> <p>19 that the data did not show a statistically</p> <p>20 significant relationship between talcum powder use</p> <p>21 and any type of epithelial ovarian cancer; is -- is</p> <p>22 that right?</p> <p>23 A The Gates authors concluded that there was</p> <p>24 no association between any talcum powder product</p> <p>25 use, and it was not significant in ovarian cancer,</p>

7 (Pages 266 to 269)

Rebecca Smith-Bindman, M.D.

Page 270	Page 272
<p>1 yes.</p> <p>2 Q Another short study that you did not</p> <p>3 include in your systematic review was the Houghton</p> <p>4 study; is that right?</p> <p>5 MS. O'DELL: Object to form.</p> <p>6 A Yes, that is true.</p> <p>7 Q (BY MR. ZELLERS) The Houghton study was</p> <p>8 based on -- or is also called the Women's Health</p> <p>9 Initiative Study; is that right?</p> <p>10 A Yes, it is.</p> <p>11 Q That involved 61,000 women; is that right?</p> <p>12 A That is correct.</p> <p>13 Q Houghton 2014 did not find a statistically</p> <p>14 significant relationship between perineal talc use</p> <p>15 and ovarian cancer among women who had ever used</p> <p>16 talc; is that right?</p> <p>17 A That is what they concluded.</p> <p>18 Q Or among women who had fewer than nine</p> <p>19 years of perineal talc use, correct?</p> <p>20 A Correct.</p> <p>21 Q Or among women who had more than 10 years</p> <p>22 of perineal talc use, correct?</p> <p>23 A Can you say that last part?</p> <p>24 Q Sure.</p> <p>25 A Sorry.</p>	<p>1 using it on a -- on a frequent basis, so I think the</p> <p>2 duration is very different measure.</p> <p>3 Q We talked yesterday about your definition</p> <p>4 of "regular use," and you pointed me to your report</p> <p>5 where you give an extensive discussion of that.</p> <p>6 Do you remember?</p> <p>7 A I do.</p> <p>8 Q Did -- your definition of "regular use,"</p> <p>9 was that every psychometrically tested to</p> <p>10 demonstrate any validity or reliability?</p> <p>11 MS. O'DELL: Object to the form.</p> <p>12 A Of -- are you asking about the reliability</p> <p>13 of the way we defined it --</p> <p>14 Q (BY MR. ZELLERS) Yes.</p> <p>15 A -- or about the concept?</p> <p>16 Q No. About the way you defined it.</p> <p>17 A I believe we explained in the report that</p> <p>18 we tried to approximate regular use, frequency use</p> <p>19 by being at least three times a week and as close to</p> <p>20 daily as possible.</p> <p>21 But in terms of -- if that is -- I -- I'm</p> <p>22 not -- we have not validated that in different</p> <p>23 studies or --</p> <p>24 Q That's something that you came up with; is</p> <p>25 that right?</p>
Page 271	Page 273
<p>1 Q Houghton 2014, that cohort study --</p> <p>2 A Okay. No. I -- yes, that is correct.</p> <p>3 Q And also, they did not find a</p> <p>4 statistically significant relationship between</p> <p>5 perineal talc use -- strike that.</p> <p>6 They also did not find a statistically</p> <p>7 significant relationship between the use of talcum</p> <p>8 powder on sanitary napkins or diaphragms on -- and</p> <p>9 ovarian cancer; is that right?</p> <p>10 A That's correct.</p> <p>11 Q Houghton does report on duration of use at</p> <p>12 least more than 10 years of use; is that right?</p> <p>13 A Yes.</p> <p>14 Q But would you consider women who use</p> <p>15 talcum powder for more than 10 years to be frequent</p> <p>16 talc users?</p> <p>17 MS. O'DELL: Object to the form.</p> <p>18 A So you're asking if duration of use can be</p> <p>19 equated with frequency of use, and -- and I would</p> <p>20 very strongly disagree that those are equivalent.</p> <p>21 And that is the primary reason that I</p> <p>22 discount the results of the Gonzalez and Houghton</p> <p>23 and Gates studies.</p> <p>24 Because frequency of use, meaning to use</p> <p>25 it once a month or once a year, is not the same as</p>	<p>1 A Yeah.</p> <p>2 MS. O'DELL: Object to the form.</p> <p>3 A Yes, it is.</p> <p>4 Q (BY MR. ZELLERS) Gonzalez. You criticize</p> <p>5 Gonzalez in your report for combining various types</p> <p>6 of use. Do you recall that generally? So that's</p> <p>7 page 21 where --</p> <p>8 A No. I'm -- I'm on my report. My -- my</p> <p>9 hesitation is it's not so much that I'm criticizing</p> <p>10 the study. It's rather it doesn't contribute to</p> <p>11 answering the question that I was asking, which was:</p> <p>12 Does regular perineal talc exposure increase the</p> <p>13 risk?</p> <p>14 It doesn't mean that the questions they</p> <p>15 have asked are not interesting questions. They were</p> <p>16 just not the ones I was focusing on.</p> <p>17 Q Why would combining various types of use,</p> <p>18 bias the results in favor of not detecting an</p> <p>19 association?</p> <p>20 I guess from your statement it -- it may</p> <p>21 well not bias the results; is that right? It just</p> <p>22 was just a different question --</p> <p>23 A It's just a different question.</p> <p>24 Q -- than what --</p> <p>25 A I --</p>

8 (Pages 270 to 273)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 274</p> <p>1 Q -- you were looking at?</p> <p>2 A -- I believe that you want to have as</p> <p>3 narrow a definition, in my belief, of meta-analysis</p> <p>4 as possible to understand when you're pooling</p> <p>5 results, make sure -- something you said -- you're</p> <p>6 combining apples to apples.</p> <p>7 And I think one would expect that any</p> <p>8 potential -- potential exposure to talcum powder</p> <p>9 would matter what skin or surface or cell line or</p> <p>10 tissue you're putting against, and you wouldn't</p> <p>11 necessarily expect the same result in a cervical</p> <p>12 exposure or a diaphragm exposure or a vaginal</p> <p>13 exposure.</p> <p>14 You -- you might have an association of</p> <p>15 those places. You might not. I just think it's a</p> <p>16 different question.</p> <p>17 Q All of the cohort studies were prospective</p> <p>18 as opposed to retrospective; is that right?</p> <p>19 A Yes.</p> <p>20 Q Prospective studies are not subject to</p> <p>21 recall bias like retrospective studies, correct?</p> <p>22 A Yes, that's true.</p> <p>23 Q They're also not subject to the same</p> <p>24 selection bias as retrospective studies, correct?</p> <p>25 MS. O'DELL: Object to the form.</p>	<p style="text-align: right;">Page 276</p> <p>1 absolutely that's a possibility.</p> <p>2 Q You also looked at both the hospital-based</p> <p>3 and the population-based case-control studies; is</p> <p>4 that right?</p> <p>5 A I did.</p> <p>6 Q None of the hospital-based case-control</p> <p>7 studies show a statistically significant association</p> <p>8 between talc use and ovarian cancer, correct?</p> <p>9 A I -- I'm not sure --</p> <p>10 Q Take a look at --</p> <p>11 A -- where you're getting that from.</p> <p>12 Q I will show you the Langseth paper from</p> <p>13 2008, which you cite and we talked about yesterday.</p> <p>14 Let's mark this as Exhibit 30.</p> <p>15 (Exhibit 30 was marked for identification</p> <p>16 and is attached to the transcript.)</p> <p>17 A I have it. I have it.</p> <p>18 Q (BY MR. ZELLERS) All right. Now -- and</p> <p>19 let me just -- I'll put it in the record there.</p> <p>20 MS. O'DELL: Thank you.</p> <p>21 Q (BY MR. ZELLERS) If you look at the</p> <p>22 Langseth paper, on the second page, Figure 1, they</p> <p>23 list out all of the population -- or at least a</p> <p>24 great number of the population-based and</p> <p>25 case-control studies and the hospital-based</p>
<p style="text-align: right;">Page 275</p> <p>1 A In general, case-control studies are often</p> <p>2 plagued with selection bias, but they don't have to</p> <p>3 be.</p> <p>4 Q (BY MR. ZELLERS) Well, recall bias can</p> <p>5 distort a scientific evaluation of whether an</p> <p>6 exposure is actually related to a disease, correct?</p> <p>7 A Yes.</p> <p>8 Q So for example, recall bias could distort</p> <p>9 results if women with ovarian cancer were more</p> <p>10 likely to remember their exposure to talc than women</p> <p>11 without ovarian cancer; is that right?</p> <p>12 A That is a theoretical risk.</p> <p>13 Q In fact, in your report on page 17, you</p> <p>14 acknowledge that the risk of bias is greater for</p> <p>15 case-control studies as opposed to cohort studies;</p> <p>16 is that right?</p> <p>17 A Yes.</p> <p>18 Q Recall bias could explain the fact that</p> <p>19 some retrospective case-control studies have found a</p> <p>20 statistically significant relationship between</p> <p>21 talcum powder and ovarian cancer, but the cohort</p> <p>22 studies have not, correct?</p> <p>23 A That is a theoretical risk. To do that</p> <p>24 you would need to have some knowledge in the</p> <p>25 population that influenced that recall bias, but</p>	<p style="text-align: right;">Page 277</p> <p>1 case-control studies; is that right?</p> <p>2 A Yes, they do.</p> <p>3 Q (BY MR. ZELLERS) At least among the</p> <p>4 hospital-based case-control studies that are</p> <p>5 identified by Langseth in Figure 1, it appears that</p> <p>6 there's six hospital-based case-control studies.</p> <p>7 None of those hospital-based case-control</p> <p>8 studies show a statistically significant</p> <p>9 association, correct?</p> <p>10 MS. O'DELL: Object to the form.</p> <p>11 A We discussed this yesterday. But if</p> <p>12 you're asking if the individual hospital-based</p> <p>13 studies overlap one, then they overlap one.</p> <p>14 Q (BY MR. ZELLERS) They do not overlap one?</p> <p>15 A The -- the hospital-based studies do</p> <p>16 overlap one.</p> <p>17 Q Okay. The population-based case-control</p> <p>18 studies, which are up above in our</p> <p>19 Langseth Figure 1, some of those -- if we look at</p> <p>20 the individual studies -- show statistical</p> <p>21 significance, and some of those do not; is that</p> <p>22 right?</p> <p>23 A I'm -- I'm hesitant to be as definitive</p> <p>24 about using the confidence interval that are</p> <p>25 presented here as being a reflection of statistical</p>

9 (Pages 274 to 277)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 278</p> <p>1 significance.</p> <p>2 All of them are shifted to the right. All</p> <p>3 of them have a positive association. And the</p> <p>4 confidence interval for some of them overlap one.</p> <p>5 But taken as a group, there's statistical</p> <p>6 significance for the entirety of the population --</p> <p>7 of the population of studies that he looked at.</p> <p>8 Q As we did discuss yesterday, if you look</p> <p>9 at the population-based studies individually, at</p> <p>10 least based upon what's reported by Langseth in his</p> <p>11 Figure 1, some demonstrate statistical significance</p> <p>12 and some do not; is that right?</p> <p>13 A I -- again, it's -- they're slightly --</p> <p>14 it's -- it's not the only -- the confidence interval</p> <p>15 overlapping one is sort of what I consider a</p> <p>16 quick-and-dirty way to answer statistical</p> <p>17 significance.</p> <p>18 It's not exactly that way. But some of</p> <p>19 them clearly suggest statistical significance. I</p> <p>20 think ten of them. And four of them suggest not</p> <p>21 statistical significance. So the individual</p> <p>22 studies. But it's a little more complicated than</p> <p>23 that.</p> <p>24 Q Would you agree that if a study does not</p> <p>25 show statistical significance, that it could mean</p>	<p style="text-align: right;">Page 280</p> <p>1 tell if things are different or the -- or</p> <p>2 indistinguishable, the confidence interval for the</p> <p>3 pooled odds ratio for the population-based studies</p> <p>4 goes from 1.29 to 1.52, so the truth is likely in</p> <p>5 that range, where the truth for the hospital-based</p> <p>6 studies is 0.92 to 1.63. They overlap.</p> <p>7 And so I would interpret that using this</p> <p>8 sort of quick approach is that there's not a</p> <p>9 statistical difference between the summary of the</p> <p>10 pooled odd ratio based on the type of populations</p> <p>11 that were recruited.</p> <p>12 Again, the point estimates are a little</p> <p>13 bit different for sure, 1.4 versus 1.12. But the</p> <p>14 confidence intervals overlap, suggesting that</p> <p>15 they're not -- they're not different.</p> <p>16 Q You are familiar with selection bias; is</p> <p>17 that right?</p> <p>18 A I am.</p> <p>19 Q Would you agree that the hospital-based</p> <p>20 case-control studies may be less susceptible to</p> <p>21 selection bias than population-based case-control</p> <p>22 studies?</p> <p>23 MS. O'DELL: Object to the form.</p> <p>24 A I -- I would not agree with that. In</p> <p>25 general, you think about hospital-based studies as</p>
<p style="text-align: right;">Page 279</p> <p>1 that no risk exists?</p> <p>2 A If --</p> <p>3 MS. O'DELL: Object to the form.</p> <p>4 A -- an individual study shows no</p> <p>5 statistical significance, it means -- with all</p> <p>6 research -- that the most likely truth is the point</p> <p>7 estimate, which is whatever that point estimate is,</p> <p>8 but that you could not exclude chance as one of the</p> <p>9 possible causes for the results.</p> <p>10 Q (BY MR. ZELLERS) If we looked just at the</p> <p>11 population-based case-control studies and the</p> <p>12 hospital-based case-control studies that are shown</p> <p>13 by Langseth in Figure 1, there is an inconsistency</p> <p>14 between the two in that each of the individual</p> <p>15 hospital-based case-control studies have confidence</p> <p>16 intervals which overlap one, and many of the</p> <p>17 population-based or at least some of the</p> <p>18 population-based studies do not, correct?</p> <p>19 A I -- I do not believe there is</p> <p>20 inconsistency between the pooled odds ratio for</p> <p>21 population-based studies, which has a confidence</p> <p>22 interval that overlaps the confidence intervals for</p> <p>23 the pooled odd ratio for the hospital-based studies.</p> <p>24 So using the approach that you are</p> <p>25 suggesting of using confidence intervals, the way to</p>	<p style="text-align: right;">Page 281</p> <p>1 being potentially a great deal more bias.</p> <p>2 Now, that -- with that caveat, it depends</p> <p>3 on how you found your cases and your controls.</p> <p>4 But in general, you want to find</p> <p>5 population-based cases and controls, I believe,</p> <p>6 rather than hospital-based. But it matters how they</p> <p>7 are recruited.</p> <p>8 Q Hospital-based control studies are</p> <p>9 comparing hospitalized patients to hospitalized</p> <p>10 patients; is that right?</p> <p>11 A I -- I -- in this case, yes, I think</p> <p>12 that's --</p> <p>13 Q And --</p> <p>14 A -- how they define it.</p> <p>15 Q -- in population based studies, you're</p> <p>16 more likely to be comparing ill people to healthy</p> <p>17 people; is that right?</p> <p>18 A Again, it -- it depends on how you're</p> <p>19 selecting. If you're selecting patients who are</p> <p>20 sick in the hospital and comparing that to healthy</p> <p>21 patients who are outpatient population based, that</p> <p>22 would be the kind of bias that you are describing.</p> <p>23 That would be the worst.</p> <p>24 But if you're, in fact, comparing</p> <p>25 relatively comparable population-based cases and</p>

10 (Pages 278 to 281)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 282</p> <p>1 controls, then I don't agree that hospital-based 2 controls are -- are better. 3 Q Penninkilampi. One of the studies that 4 you talked to us about yesterday was Penninkilampi 5 2018; is that right? 6 A Yes. 7 Q Penninkilampi 2018 did not include the 8 Gates 2010 cohort study; is that right? 9 A That's correct. 10 Q Did you verify that the data that 11 Penninkilampi reports is accurate? 12 A I did not. Did I go back and validate 13 their individual abstracted data? 14 Q Yeah. 15 A I did not. 16 Q In determining that a study is of high 17 quality, would it be important to you that the 18 authors are accurately reporting the odds ratios and 19 confidence intervals? 20 A Data accuracy is important to me. And -- 21 and I would look towards the journal peer review 22 process to have done that, yes. 23 Q If -- if there were errors in reporting of 24 the odds ratios or the confidence intervals, that 25 could call into question the reliability of the</p>	<p style="text-align: right;">Page 284</p> <p>1 been established; is that right? 2 A That is what they say. 3 Q Meta-analyses or systematic analyses, that 4 can combine the work of other published studies into 5 one study; is that right? 6 A Yes. 7 Q If there are biases and confounding in the 8 underlying studies, the meta-analysis or the 9 systematic review or analysis will reflect the 10 biases and confounding; is that right? 11 MS. O'DELL: Object to the form. 12 A Any biases in the papers will not go away 13 by combining them. I'm not sure what you mean by 14 "the confounding." If -- if a paper has an 15 accounting for confounding? 16 Q (BY MR. ZELLERS) Let me ask you another 17 question. A proper meta-analysis or systematic 18 review must analyze the sources of heterogeneity 19 across the studies; is that right? 20 A Yes. 21 Q And a proper meta-analysis or systematic 22 review must examine the methodology of each of the 23 underlying studies, correct? 24 A Yes. 25 Q You have given some opinions -- or at</p>
<p style="text-align: right;">Page 283</p> <p>1 study; is that right? 2 MS. O'DELL: Object to the form. 3 A Yes, that's definitely possible. 4 Q (BY MR. ZELLERS) Penninkilampi 2018, that 5 study specifically states that a certain causal link 6 between talc use and ovarian cancer has not been 7 established, correct? 8 MS. O'DELL: Object to the form. 9 A I don't remember them concluding that. 10 But if you tell me where -- 11 Q (BY MR. ZELLERS) Sure. 12 A -- it is -- 13 Q Look at page 42, at the end of first 14 paragraph. 15 A Well, perineal talc use has not been shown 16 to be safe. In a similar regard, a certain causal 17 link between the use and ovarian cancer has not been 18 established -- 19 Q And you -- 20 A -- is what -- 21 Q -- okay. 22 A -- Penninkilampi says. 23 Q And I think you omitted the word "talc." 24 But their specific statement is, A certain causal 25 link between talc use and ovarian cancer has not yet</p>	<p style="text-align: right;">Page 285</p> <p>1 least you state some opinions relating to the 2 biological mechanisms of cancer; is that right? 3 A Yes. 4 Q The biological mechanisms of cancer are 5 not your area of expertise; is that correct? 6 MS. O'DELL: Object to the form. 7 A I'm knowledgeable about the biological 8 mechanism of cancer as a scientist, as a physician, 9 as a cancer epidemiologist. 10 Q (BY MR. ZELLERS) Would you agree that 11 there are others who are more closely involved in 12 the area of biologic plausibility as it relates to 13 the perineal use of talcum powder and ovarian 14 cancer? 15 MS. O'DELL: Object to the form. 16 A I believe there are others who have more 17 expertise directly in that area than I do. 18 Q (BY MR. ZELLERS) Your opinion is that 19 talcum powder travels from the perineal region to 20 the ovaries through the women's reproductive tract; 21 is that right? 22 A Yes. 23 Q If talcum powder can make this migration, 24 can other substances make the same migration? 25 A Yes.</p>

11 (Pages 282 to 285)

Rebecca Smith-Bindman, M.D.

Page 286	Page 288
<p>1 Q Sand from the beach?</p> <p>2 A I don't know if there's evidence of sand</p> <p>3 from the beach.</p> <p>4 Q Toilet paper particles?</p> <p>5 A I -- I -- I do not know if there's</p> <p>6 evidence of that.</p> <p>7 Q There are no human studies that</p> <p>8 demonstrate the migration of any particulate matter</p> <p>9 from outside the peri -- peritoneum to the ovaries,</p> <p>10 correct?</p> <p>11 MS. O'DELL: Object to the form.</p> <p>12 A When you say "demonstrate," do you mean</p> <p>13 active demonstration or a suggestion that it has</p> <p>14 gone that route?</p> <p>15 Q (BY MR. ZELLERS) Active -- active</p> <p>16 demonstration.</p> <p>17 A So there are no studies that I know of</p> <p>18 that have taken talcum powder and then documented</p> <p>19 its movement through -- to the ovaries.</p> <p>20 Q Or any particulate from outside the</p> <p>21 perineum to the ovaries, correct?</p> <p>22 MS. O'DELL: Object to the form.</p> <p>23 A I -- I don't know of any sort of active</p> <p>24 studies that have watched it moved. It's rather the</p> <p>25 studies have found the particulate matter at its</p>	<p>1 are a lot of other factors such as sphincters or the</p> <p>2 type of mucosa that it is or mucous barriers that</p> <p>3 might have a very strong relationship to the</p> <p>4 concentration of talc.</p> <p>5 So the rectum and the bladder have</p> <p>6 sphincters, and the mucosa and the vagina and the</p> <p>7 bladder and rectum are very different than the</p> <p>8 mucosa of the ovary. The endometrium has different</p> <p>9 tissue.</p> <p>10 So I agree with you that you would expect</p> <p>11 proximity would be one factor that might affect</p> <p>12 concentration. But the characteristics of the</p> <p>13 tissue, the barriers, the physical or mucosal could</p> <p>14 be expected to have a much bigger impact.</p> <p>15 Q No studies that you're aware of show</p> <p>16 inflammation as a result of genital talc use in the</p> <p>17 rectal, vulvar, vaginal, cervical, and uterine</p> <p>18 tissues; is that right?</p> <p>19 A I do not know of those studies.</p> <p>20 Q And no studies show a link between</p> <p>21 external genital talc use and rectal, vulvar,</p> <p>22 vaginal, cervical, or uterine cancer; is that right?</p> <p>23 MS. O'DELL: Object to the form.</p> <p>24 A That is correct.</p> <p>25 Q (BY MR. ZELLERS) You have not done an</p>
Page 287	Page 289
<p>1 destination and then have supposed it had to travel</p> <p>2 there in some way.</p> <p>3 Q (BY MR. ZELLERS) None of the studies that</p> <p>4 you cite in your report actually looked at whether</p> <p>5 talcum powder can migrate from perineal application</p> <p>6 through the fallopian tubes to the ovaries, correct?</p> <p>7 A Correct.</p> <p>8 MS. O'DELL: Object to the form.</p> <p>9 Q (BY MR. ZELLERS) You also cannot cite any</p> <p>10 article that shows granulomas, fibrosis, or</p> <p>11 adhesions anywhere up the reproductive tract of a</p> <p>12 women as result of her external genital talc</p> <p>13 application; is -- is that right?</p> <p>14 A Yes.</p> <p>15 Q If talcum powder migrates from the</p> <p>16 perineal region to the ovaries, shouldn't exposure</p> <p>17 to talc be far greater in concentration in the</p> <p>18 rectal, vulvar, vaginal, cervical, and uterine</p> <p>19 tissues which are closer to the area of initial</p> <p>20 exposure?</p> <p>21 MS. O'DELL: Object to the form.</p> <p>22 A I think that assumes that proximity and</p> <p>23 concentration, which you would expect which would</p> <p>24 fall off with more distance, is the only factor that</p> <p>25 would determine concentrations when, in fact, there</p>	<p>1 expert review of the inflammation evidence yourself;</p> <p>2 is that fair?</p> <p>3 MS. O'DELL: Object to the form.</p> <p>4 A I -- I have done a lot of reading of the</p> <p>5 inflammation literature. I'm not sure how I would</p> <p>6 define it as an expert or not an expert -- expert</p> <p>7 review.</p> <p>8 Q (BY MR. ZELLERS) You do know that not all</p> <p>9 inflammatory conditions lead to cancer, correct?</p> <p>10 A There's a lot of literature about certain</p> <p>11 inflammation that causes chronic -- in particular a</p> <p>12 lot of different kind of cancers, more publications</p> <p>13 about acute inflammation that does not lead to</p> <p>14 cancer.</p> <p>15 But yes, there are both cancers that are</p> <p>16 very susceptible to inflammation or caused by it and</p> <p>17 some that are not.</p> <p>18 Q Chronic inflammation. There are many</p> <p>19 chronic inflammatory conditions that do not lead to</p> <p>20 cancer; is that right?</p> <p>21 A Yes.</p> <p>22 Q Do you agree that an agent can be a</p> <p>23 carcinogenic for one type of cancer, but not for</p> <p>24 others?</p> <p>25 A Yes.</p>

12 (Pages 286 to 289)

Rebecca Smith-Bindman, M.D.

Page 290	Page 292
<p>1 Q Rheumatoid arthritis, that is a chronic 2 inflammation condition, but it does not increase the 3 risk of my ovarian cancer, correct? 4 A Correct. 5 Q The same with psoriasis; is that right? 6 A Not that I know of. 7 Q Page 41 of your report, you conclude that, 8 Regular exposure to talcum powder products causes 9 ovarian cancer in some women. 10 Do you see that? 11 A I do. 12 Q Is there a certain amount of talcum powder 13 that a product must contain to cause inflammation? 14 MS. O'DELL: Object to the form. 15 A I -- I -- I do not know of evidence that 16 quantifies the amount of exposure that's necessary 17 that a published literature supports the amount 18 women use is an amount that leads to cancer, but 19 I -- I don't know if there's a minimum threshold 20 or... 21 Q (BY MR. ZELLERS) Do you consider 22 cornstarch to be a talcum powder product that causes 23 inflammation? 24 MS. O'DELL: Object to the form. 25 A Talcum powder -- cornstarch -- talcum</p>	<p>1 A In a few of the papers I reviewed -- not 2 very many of them, but a few of them had a small 3 proportion of women who were exposed to cornstarch 4 rather than talc powder products. 5 I -- I think it -- they had negative 6 results, but they were small -- a small number of 7 women, so I wouldn't use that to prove that it's 8 safe. 9 But I don't know of any literature that 10 suggests cornstarch is carcinogenic. 11 Q Your opinion that talcum powder products 12 cause inflammation is not based on the determination 13 that there is a threshold amount of talcum powder 14 that will be required to be in the product before 15 you can conclude that the product will cause chronic 16 inflammation; is -- is that right? 17 MS. O'DELL: Object to the form. 18 A I -- I -- I think I would like to agree. 19 I'm just not sure exactly of -- what I am agreeing 20 to. So I -- I don't know any level -- 21 MS. O'DELL: That's always -- 22 A -- of -- 23 MS. O'DELL: -- a good sign you should -- 24 A -- I -- I can't -- 25 MS. O'DELL: -- be --</p>
Page 291	Page 293
<p>1 powder causes inflammation. Cornstarch can also 2 cause inflammation. 3 I believe cornstarch tends to be an acute 4 inflammatory process rather than a chronic 5 inflammation process. But -- 6 Q (BY MR. ZELLERS) You -- 7 A -- I -- I wouldn't consider cornstarch to 8 be a talcum powder -- 9 Q Is -- 10 A -- product. 11 Q -- is there a study that you can point me 12 to that states that any inflammation from cornstarch 13 is acute and not chronic? 14 MS. O'DELL: Object to the form. 15 A There's a literature about cornstarch 16 leading to acute inflammation, for example, in the 17 surgical literature when it was on surgical gloves 18 or on physical exams which has led to its being 19 removed so -- so as to reproduce acute inflammatory 20 processes. 21 Q (BY MR. ZELLERS) My question to you is: 22 Are you aware of any literature that states that 23 cornstarch is not associated with a chronic 24 inflammatory condition? 25 MS. O'DELL: Object to the form.</p>	<p>1 A -- I can't tell exactly what the -- what 2 the question is. 3 I -- there -- I don't know -- I don't know 4 an amount of talcum powder that would make a product 5 safe. 6 Q (BY MR. ZELLERS) Do you believe that 7 cornstarch is a superior alternative to talc? 8 A I believe that talcum powder products will 9 increase women's risk of cancer, and I would avoid 10 using it as a woman or as a doctor counseling my 11 patients. 12 Q Well -- 13 A I don't have views that cornstarch is a 14 carcinogenic product. So in terms of any potential 15 risk-benefit relationship of cornstarch has the same 16 value in terms of absorbency and much fewer risk of 17 harm, then if that's the question, then I think 18 cornstarch is preferable. 19 Q There are no reports in the literature of 20 externally applied talc leading to inflammation, 21 granulomas, fibrosis, or adhesions anywhere along a 22 women's reproductive tract, correct? 23 MS. O'DELL: Objection, asked and 24 answered. 25 A Not that I know of.</p>

13 (Pages 290 to 293)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 294</p> <p>1 Q (BY MR. ZELLERS) On page 12 of your report 2 you state, The most widely accepted mechanism for 3 initiation, promotion, and progression of ovarian 4 cancer is tissue inflammation, leading to a series 5 of responses that result in cancer. 6 Do you see that statement? 7 A I do. 8 Q You do not cite any support in your report 9 for that proposition, correct? 10 MS. O'DELL: Object to the form. 11 A I -- I think my -- that first paragraph 12 was sort of an introduction to that section. So 13 then I go on to cite, I -- I think, the supporting 14 evidence within the next few paragraphs. 15 Q (BY MR. ZELLERS) You would agree that 16 research regarding whether chronic inflammation can 17 cause ovarian cancer is ongoing, correct? 18 A It's an active area of research. 19 Q Are you familiar with a paper published by 20 Melissa Merritt in 2008, entitled "Talcum Powder 21 Chronic Pelvic Inflammation and NSAIDS in Relation 22 to Risk of Epithelial Ovarian Cancer"? 23 A I am. 24 Q It's included in your reliance materials 25 on page 17; is that right?</p>	<p style="text-align: right;">Page 296</p> <p>1 inflammation; is that right? 2 A Yes, they do. 3 Q If inflammation is a mechanism for ovarian 4 cancer, you would expect women who use NSAIDS or 5 aspirin to have a lower risk of ovarian cancer, 6 correct? 7 MS. O'DELL: Object to the form. 8 A Other things being equal, you might expect 9 that if you could measure inflammation or influence 10 it by using NSAIDS, that that might be associated. 11 That is true. 12 Q (BY MR. ZELLERS) The literature, though, 13 is mixed in terms of whether or not the use of 14 NSAIDS or aspirin actually reduce the risk of 15 ovarian cancer; is that right, or the incidence of 16 -- 17 A So -- 18 Q -- ovarian cancer? 19 A -- I have reviewed those papers and would 20 agree with you that some seem to suggest one 21 direction, some others. I haven't quantified them 22 together or tried to summarize them. 23 But I would agree. There doesn't seem to 24 be a consistent message in that literature. 25 Q One of those papers is -- that's included</p>
<p style="text-align: right;">Page 295</p> <p>1 A Can you tell me the title again? Yeah. 2 Okay. 3 Q Sure. Do you have that or I can -- 4 A No. 5 Q -- mark it? 6 A No, I have it. 7 Q If you go to page 174 of the Merritt 8 paper -- and tell me when you're -- 9 A I'm there. 10 Q -- there -- at the bottom of the first 11 paragraph of the discussion, the authors conclude, 12 These results, in combination with previous studies, 13 suggest that chronic inflammation is unlikely to 14 play a major role in the development of ovarian 15 cancer. 16 Is that right? Did I read that correctly? 17 A Using the results that they had available 18 on the data in 2007, that is what Dr. Merritt 19 concluded. 20 Q You also discuss in your report -- well, 21 let me withdraw that. 22 You're familiar with NSAIDS, nonsteroidal 23 antiinflammatory agents; is that right -- 24 A Yes, I am. 25 Q -- and aspirin? Those medicines reduce</p>	<p style="text-align: right;">Page 297</p> <p>1 in your reliance list is the Verdoodt 2017 paper; is 2 that right? That's V E R D O O D T. 3 A I am going to have to defer to seeing 4 that. 5 Q Okay. Let me -- 6 A I believe -- 7 Q -- show you -- 8 A -- it's on my list. 9 Q -- I will mark that paper as Exhibit 31. 10 (Exhibit 31 was marked for identification 11 and is attached to the transcript.) 12 A Thank you. 13 Q (BY MR. ZELLERS) And turn, if you will, to 14 page 5 under "Discussion" on the first paragraph. 15 A And just to confirm, this is -- I -- I 16 have read this. This is a review article, right? 17 Q Yes. 18 A Okay. 19 Q So on page 5 under "Discussion," the first 20 sentence, the authors state, The sparse and 21 equivocal results for the association between NSAID 22 use and mortality among ovarian and endometrial 23 cancer patients preclude any firm conclusions at 24 this point. 25 Is that right?</p>

14 (Pages 294 to 297)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 298</p> <p>1 A That is what this author concludes. I'm 2 trying to see what references he used for that, but 3 that is what he concludes. 4 Q Okay. And this is an article that was 5 published in 2017, correct? 6 A Yes. 7 Q Yesterday counsel for plaintiffs indicated 8 that you have -- in addition to the materials in 9 your report -- reviewed a 2018 chapter by Saed and 10 the Harper and Saed 2019 abstract; is that right? 11 A I -- I reviewed several of his abstracts 12 and -- and a recent paper, yes. 13 Q Do you know that Dr. Saed is a paid expert 14 for the Plaintiffs in this litigation? 15 A I know he's a very well-respected 16 scientist that they have supported in his research. 17 Q Is that a yes? 18 MS. BOCKUS: I object. Nonresponsive. 19 MS. O'DELL: Mike, excuse me. 20 MR. ZELLERS: Sure. 21 MS. O'DELL: You said the 2019 abstract. 22 Did you mean the abstract or the manuscript, just to 23 make sure I'm following the conversation? 24 MR. ZELLERS: I -- I believe I mean the 25 abstract. But we mean whatever the doctor has in</p>	<p style="text-align: right;">Page 300</p> <p>1 Q Have you spoken with Dr. Saed? 2 A I have not. 3 Q Have you requested any information from 4 Dr. Saed? 5 A I have not. 6 Q The Saed study just looked at immortalized 7 cell lines; is that right? 8 A Yes, I believe that's how the cell lines 9 were -- 10 Q Are -- 11 A -- defined. 12 Q -- are you -- are you aware that Dr. Saed 13 testified that the cells were modified with a virus 14 to make them keep undergoing division in vitro? 15 A I -- I'm aware that that's what happens to 16 cell lines. I -- I don't believe I saw his 17 deposition to say that. 18 Q Are you aware that Dr. Saed testified that 19 the P53 gene was turned off in those cells? 20 A No, I'm not aware. 21 Q Are you aware based upon your reading that 22 the loss of the P53 protein contributes to 23 unrestrained cellular proliferation? 24 MS. O'DELL: Object to the form. 25 A I -- I believe that the reason you have</p>
<p style="text-align: right;">Page 299</p> <p>1 her file that we marked yesterday. 2 THE COURT REPORTER: Who objected down 3 there? 4 MS. BOCKUS: Jane Bockus. 5 MS. O'DELL: I think what she had in her 6 file was the manuscript. So I think that's what you 7 marked as an exhibit, but I don't want there to be 8 confusion. 9 Q (BY MR. ZELLERS) You have reviewed several 10 publications within the last year or two from 11 Dr. Saed -- 12 A Yes. 13 Q -- is that right? 14 A Yes, I have. 15 THE COURT REPORTER: Wait. 16 MR. ZELLERS: All right. Are you okay, 17 Ms. Court Reporter? 18 THE COURT REPORTER: Yes. I just have to 19 have you wait until the end of the question, please. 20 Q (BY MR. ZELLERS) Let me re-ask my -- 21 A Please. 22 Q -- question. Did you know that Dr. Saed 23 is a paid expert for the Plaintiffs in this 24 litigation? 25 A Yes, I do.</p>	<p style="text-align: right;">Page 301</p> <p>1 controls in experiment is to account for the 2 underlying expression in turnover cells so you can 3 compare something you do to the cell versus the 4 baseline in order to account for the baseline, 5 whatever it is, proliferation of the cell or 6 apoptosis levels or expression of oxidants or 7 antioxidants. 8 So I -- I -- the way you're asking the 9 question is -- is: Are you comparing this cell line 10 to living cells in context? 11 And I would agree with you that this cell 12 line is different than living cells in context. 13 But if you're asking if it's a valid 14 comparison to do the experiment in this cell line, 15 it is because you are doing an intervention to those 16 cells that has a control group. 17 And so this cell line has a different 18 behavior than a -- a living cell does, but provides 19 a comparison group. 20 Q (BY MR. ZELLERS) What methodology did you 21 use to apply Dr. Saed's results to normal cells in 22 actual organs? 23 A So -- 24 MS. O'DELL: Object to the form. 25 A -- in some of the work that I do around a</p>

15 (Pages 298 to 301)

Rebecca Smith-Bindman, M.D.

Page 302	Page 304
<p>1 different environmental carcinogen -- radiation, for 2 example -- we look at changes of expression, certain 3 enzymes in cells to radiation to understand what 4 that damage does in terms of expression of relevant 5 genes, cell proliferation, and things like that. 6 So I take his research to mean that I can 7 understand the changes to pro oxidants to 8 antioxidants to apoptosis to gene expression in the 9 cell. Not that I can come up with the exact 10 quantification in a patient that would correspond to 11 it, but rather, what mechanisms will be stimulated 12 by the talc. 13 So to answer your question, I -- it tells 14 me what parts of the cell are sensitive to it, but 15 not the quantity that might lead to that 16 sensitivity. 17 Q (BY MR. ZELLERS) Can you cite any data 18 showing that the concentrations of exposure used in 19 the Saed study are the same as would be encountered 20 with the use of cosmetic talc in the perineal 21 region? 22 A I cannot. That's what I was trying to 23 express. 24 Q Can you cite any data showing that the 25 level of concentration of exposure used in the Saed</p>	<p>1 develop enough mutations to develop into cancer. 2 But the greater the oxidative stress for 3 cancer like ovarian cancer, the greater the chance 4 of inducing cancer. 5 Q Can you cite me to any study that says 6 that? 7 MS. O'DELL: Object to the form. 8 A Any study that says that there's a dose 9 response related to the amount of stress and the 10 member -- numbers of cancers? 11 Q (BY MR. ZELLERS) That supports, yes, your 12 statement and your position. 13 A I -- the data that I am thinking of -- and 14 I'm not sure if it's quite the same as the question 15 that you're asking -- is the number of gene 16 mutations is higher in cancer cells than it is in 17 noncancer cells. So -- 18 THE COURT REPORTER: In noncancer? 19 A In non -- cancer cells have many more 20 genetic mutations than noncancer cells. 21 Both have generic mutations. And the 22 environment of having more oxidative stress is 23 associated with getting more mutations -- 24 Q (BY MR. ZELLERS) If -- if it's -- 25 A -- but --</p>
Page 303	Page 305
<p>1 study has ever occurred in women with perineal talc 2 use? 3 MS. O'DELL: Object to the form. 4 A I want to clarify my answer. I don't know 5 those data. 6 Q (BY MR. ZELLERS) Would you agree that 7 reactive oxygen species are a normal part of cell 8 physiology? 9 A Yes. 10 Q Do all substances that cause oxidative 11 stress also cause cancer? 12 A I think you care about the balance of 13 oxidative, pro oxidative, antioxidative levels. 14 That being said, I do not know that every 15 instance where you have more pro oxidative leads to 16 cancer. I know of some where it does. I don't know 17 if it always does. 18 Q Does the presence of oxidative stress in a 19 tissue indicate that cancer will develop in that 20 tissue? 21 A I think I mentioned this yesterday, that 22 there's a sense of a probability. So the 23 probability will likely increase. 24 But most cells, thankfully, will repair 25 and -- that damage, and so most cells will not</p>	<p>1 Q -- are you finished? 2 A -- I -- I am. 3 Q Okay. If -- if exposure to a substance 4 causes oxidative stress in certain tissue, does that 5 mean that the substance will cause oxidative stress 6 in all types of tissues? 7 A No. 8 Q Does the body have a protective mechanism 9 that can limit tissue damage from oxidative stress? 10 A Yes. 11 Q Are there any publications that you are 12 aware of that indicate that oxidative stress is 13 involved in the development of ovarian cancer? 14 A We discussed earlier that inflammation 15 increases oxidative stress such as pelvic 16 inflammatory disease leads to oxidative stress. 17 And pelvic inflammatory disease is 18 associated and leads to ovarian cancer. But I'm not 19 sure if that's answers the question that you are... 20 Q Well, if I had more time, we would discuss 21 that at greater length. You're familiar with the 22 term "confounding" is that right? 23 A I -- I -- Yes, I'm -- 24 Q All right. 25 A -- familiar with that term.</p>

Rebecca Smith-Bindman, M.D.

Page 306	Page 308
<p>1 Q Confounding is where the presence of</p> <p>2 another association confuses the relationship</p> <p>3 between the exposure and the disease being studied;</p> <p>4 is -- is that right?</p> <p>5 A Yes.</p> <p>6 Q Confounding can distort results in</p> <p>7 epidemiological studies; is that right?</p> <p>8 A Yes.</p> <p>9 Q Would you agree that residual confounding</p> <p>10 is possible in every observational study?</p> <p>11 A Yes.</p> <p>12 Q It's also -- strike that.</p> <p>13 It's possible that unmeasured confounders</p> <p>14 may be present in every observational study,</p> <p>15 correct?</p> <p>16 A Yes.</p> <p>17 Q It's impossible to say that all known and</p> <p>18 unknown confounding factors have been controlled for</p> <p>19 in any given study; is that right?</p> <p>20 A Yes.</p> <p>21 Q Would you agree that there are new factors</p> <p>22 that are being discussed that are possibly involved</p> <p>23 with ovarian cancer that are just being published in</p> <p>24 the literature such as a history of chlamydia</p> <p>25 infection and a history of weight gain during</p>	<p>1 is unavoidable in this type of summary. The large</p> <p>2 difference in general between adjusted and crude</p> <p>3 results emphasizes the importance of adjustments</p> <p>4 when estimating particular risk?</p> <p>5 THE COURT REPORTER: When estimating?</p> <p>6 MR. ZELLERS: Particular risk.</p> <p>7 A Are you asking what I meant by that?</p> <p>8 Q (BY MR. ZELLERS) Yes. What did you mean</p> <p>9 by that?</p> <p>10 A Okay. I -- I would say my sentence is not</p> <p>11 as clear as it should have been. What I mean -- and</p> <p>12 I'm not really sure why I pointed this out just for</p> <p>13 Berge -- it's really a general -- is that the</p> <p>14 studies they included, adjusted for different</p> <p>15 covariants.</p> <p>16 They didn't all adjust for the same</p> <p>17 covariates. So a variety of covariates, meaning</p> <p>18 they didn't all adjust for the exact same</p> <p>19 covariates.</p> <p>20 But this is unavoidable in this type of</p> <p>21 study. So I was just saying that some of the</p> <p>22 included studies adjusted for A, B and C; and others</p> <p>23 were adjusted for B, C, and D; and others D, E, and</p> <p>24 F.</p> <p>25 Q Huncharek, page 26. Do you see that</p>
Page 307	Page 309
<p>1 adolescence?</p> <p>2 MS. O'DELL: Object to the form.</p> <p>3 A Chlamydia infection would be the most</p> <p>4 common infection of PID, and so that's something</p> <p>5 that I just mentioned. I'm not sure that that's</p> <p>6 such a new one.</p> <p>7 And weight gain during adolescence is</p> <p>8 something that's of interest across a range of</p> <p>9 cancers, like breast cancer. I don't know it</p> <p>10 personally around ovarian cancer, but...</p> <p>11 Q (BY MR. ZELLERS) Those factors that we</p> <p>12 just talked about generally have not been controlled</p> <p>13 for in any of the published talcum powder ovarian</p> <p>14 cancer studies; is that right?</p> <p>15 A I -- the PID, I -- I think, has it in a</p> <p>16 paper or two. And -- and the weight gain, I -- I</p> <p>17 don't -- I have never seen that one.</p> <p>18 Q We talked yesterday about the Berge study.</p> <p>19 Do you remember that?</p> <p>20 A I do.</p> <p>21 Q And you talk about Berge on page 25 of</p> <p>22 your report.</p> <p>23 What do you mean when you say, A second</p> <p>24 limitation of Berge is that the included studies</p> <p>25 adjusted for a variety of covariates, although this</p>	<p>1 reference where you talk about that study?</p> <p>2 A Yes.</p> <p>3 Q You say that the difference between a</p> <p>4 relative risk of 1.19 and 1.38 is small; is that</p> <p>5 right?</p> <p>6 MS. O'DELL: You're talking about 2007 or</p> <p>7 2003?</p> <p>8 Q (BY MR. ZELLERS) Whichever --</p> <p>9 A Which page?</p> <p>10 Q -- so page 26 --</p> <p>11 MS. O'DELL: They're both on the same</p> <p>12 page.</p> <p>13 Q (BY MR. ZELLERS) I think I'm looking at</p> <p>14 the one at the bottom.</p> <p>15 MS. O'DELL: Okay. All right. 2003?</p> <p>16 MR. ZELLERS: Yes.</p> <p>17 Q (BY MR. ZELLERS) So are you with me? Are</p> <p>18 you looking at your last couple of lines there on</p> <p>19 page 26?</p> <p>20 A Yes.</p> <p>21 Q And you do say that the difference between</p> <p>22 a relative risk of 1.19 and 1.38 is small; is that</p> <p>23 right?</p> <p>24 A It -- odds ratios --</p> <p>25 Q Yeah.</p>

17 (Pages 306 to 309)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 310</p> <p>1 A -- but yes.</p> <p>2 Q All right. And -- and so a difference in</p> <p>3 odds ratios of .19, you would consider that to be a</p> <p>4 small difference?</p> <p>5 MS. O'DELL: Object to the form.</p> <p>6 A You're asking why I said those differences</p> <p>7 are small?</p> <p>8 Q (BY MR. ZELLERS) No. Well, what I guess</p> <p>9 what I want to know is: Would you agree that the</p> <p>10 difference between an odds ratio of 1.0 and 1.2 is</p> <p>11 small?</p> <p>12 MS. O'DELL: Object to the form.</p> <p>13 A I think the question of whether or not you</p> <p>14 have a difference of absolute odds of .2 along</p> <p>15 different values means the same thing. And I would</p> <p>16 say it doesn't mean the same thing.</p> <p>17 So if you have an odds ratio as an example</p> <p>18 of 4.7 versus 4.9, they're kind of the same number.</p> <p>19 If you have a number that's 1.0 versus 1.2, those</p> <p>20 are not the same number.</p> <p>21 So I don't think you would want to assume</p> <p>22 the shift in the absolute magnitude of the</p> <p>23 difference in odds. I often published difference in</p> <p>24 odds ratios of .2 is stable.</p> <p>25 But I think is -- your point is well taken</p>	<p style="text-align: right;">Page 312</p> <p>1 A Yeah.</p> <p>2 Q -- yesterday?</p> <p>3 A So the most important -- as it points out</p> <p>4 here in -- in Huncharek, the next sentence of where</p> <p>5 we are, is that this review looked at any exposure</p> <p>6 rather than quantifying.</p> <p>7 And I think the primary concern that I had</p> <p>8 was that any exposure is a very vague definition.</p> <p>9 And I thought it was much more important to have a</p> <p>10 meaningful measure of exposure.</p> <p>11 So the studies that I primarily included</p> <p>12 were ones that had quantification of the exposure,</p> <p>13 but also had some other requirements.</p> <p>14 I -- I -- I want to say that my systematic</p> <p>15 review was one piece of the information that I</p> <p>16 considered, but my summary estimate in the</p> <p>17 systematic review that I completed had the same</p> <p>18 conclusion as all these other systematic reviews.</p> <p>19 In the ballpark, it just gave me greater</p> <p>20 confidence that we were truly looking at regular</p> <p>21 exposure rather than any exposure.</p> <p>22 Now, we know that the most common exposure</p> <p>23 is regular exposure. That's the -- the more</p> <p>24 important -- most common.</p> <p>25 Q Take a look at page 39 in your report</p>
<p style="text-align: right;">Page 311</p> <p>1 that that's not a trivial difference. I was just</p> <p>2 saying in the context of a systematic review, those</p> <p>3 are both very strong, positive associations, and</p> <p>4 that's a relatively minor difference.</p> <p>5 Q (BY MR. ZELLERS) An odds ratio range of</p> <p>6 1.19 to 1.38 is much closer to an odds ratio of 1.0</p> <p>7 to 1.2 than it is to an odds ratio of 4.5 to 4.7,</p> <p>8 correct?</p> <p>9 A I -- I think that's a valid -- a valid</p> <p>10 comparison.</p> <p>11 Q On page 26, 27, there's a carryover there,</p> <p>12 but you state that the population controls are more</p> <p>13 likely relevant and valid than hospital controls.</p> <p>14 What's your support for that?</p> <p>15 A It's what we discussed earlier. I -- I</p> <p>16 think population-based controls are -- are better</p> <p>17 than hospital-based controls.</p> <p>18 Q With respect to your systematic review,</p> <p>19 did you attempt to identify gaps or flaws in the</p> <p>20 underlying studies?</p> <p>21 A I reviewed the individual studies and set</p> <p>22 forth criteria that I thought were required for</p> <p>23 inclusion.</p> <p>24 Q What were those criteria? Are those</p> <p>25 contained in your forms that we talked about --</p>	<p style="text-align: right;">Page 313</p> <p>1 where you discuss temporality; is that right?</p> <p>2 A Yes.</p> <p>3 Q You say that women may use talc when</p> <p>4 undergoing ovarian cancer treatment.</p> <p>5 Do you see that?</p> <p>6 A Yes.</p> <p>7 Q What is your support for that or what is</p> <p>8 that statement based on?</p> <p>9 A I -- I think it's based on my clinical</p> <p>10 experience that postop patients often will use</p> <p>11 talcum powder products for systematic relief of</p> <p>12 symptoms that could be related to the surgical</p> <p>13 procedure itself.</p> <p>14 Q All right. Asbestos. Are your opinions</p> <p>15 in this case dependent on talcum powder containing</p> <p>16 asbestos?</p> <p>17 A No, they're not.</p> <p>18 Q Are your opinions in this case dependent</p> <p>19 on talcum powder containing trace amounts of metals?</p> <p>20 MS. O'DELL: Object to the form.</p> <p>21 A No, they're not.</p> <p>22 Q (BY MR. ZELLERS) Are your opinions in this</p> <p>23 case dependent upon talcum powder containing any</p> <p>24 particular fragrance chemical?</p> <p>25 A No, they're not.</p>

18 (Pages 310 to 313)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 314</p> <p>1 Q Do you believe that talcum powder, which 2 does not contain asbestos, causes ovarian cancer? 3 A I don't have any data on which to conclude 4 based on epidemiologic evidence that there is such a 5 product, so I don't know that there is any product 6 that has been studied that doesn't contain asbestos 7 and fibrous talc. 8 I think in a laboratory setting, people 9 have studied products that they describe as being 10 asbestos free, and those products do cause cellular 11 damage. 12 But from an epidemiologic perspective, 13 which is primarily the data I looked at, all of the 14 products that have been studied, I believe contain 15 asbestos and fibrous talc. 16 Q You have made an assumption or it is your 17 belief that all talcum powder products contain 18 asbestos; is that right? 19 MS. O'DELL: Object to the form. 20 A My belief is that many talcum powder 21 products contain asbestos or -- 22 Q (BY MR. ZELLERS) If -- 23 A -- fibrous. 24 Q -- if your assumption about contamination 25 of talcum powder products with asbestos were not</p>	<p style="text-align: right;">Page 316</p> <p>1 A I -- I haven't seen any. 2 Q (BY MR. ZELLERS) Have you requested any? 3 MS. O'DELL: Object to the form. There 4 have been no defense expert reports in this case. 5 MR. ZELLERS: Counsel, please object to 6 form. There have been many defense expert reports 7 in the talcum powder litigation generally. 8 But my question was whether or not she has 9 seen anything, so she can -- I think she has already 10 answered. 11 Q (BY MR. ZELLERS) Is that right? Have you 12 answered the question? 13 MS. O'DELL: Object to the form. 14 A I have asked to see reports. No. I have 15 asked to see testing results. I have not asked to 16 see reports. 17 Q (BY MR. ZELLERS) Have you seen testing 18 results from the FDA and its testing of talcum 19 powder? 20 A I have. 21 Q The FDA did some testing in 2010. Did you 22 see those results? 23 A I did. 24 MS. O'DELL: Do you need a break or are 25 you good or --</p>
<p style="text-align: right;">Page 315</p> <p>1 true, would that change your opinions in this case? 2 MS. O'DELL: Object to the form. 3 A In -- in this case, it would not. I -- 4 I -- the epidemiologic evidence is very strong that 5 exposure to talcum powder products, whatever it 6 contains, is carcinogenic. 7 Q (BY MR. ZELLERS) You have looked at 8 several reports from Dr. Longo; is that right? 9 A I have. 10 Q You're aware he is a paid litigation 11 expert; is that right? 12 A Yes, I am. 13 Q You're aware he wrote his reports for the 14 purpose of this litigation and that those reports 15 have not been published; is that right? 16 A I -- I know that he has generated a report 17 for this, yes. 18 Q Do you know if any defense ex -- strike 19 that. 20 Do you know if any defense experts have 21 addressed or responded to Dr. Longo's litigation 22 reports? 23 MS. O'DELL: I would object to the form. 24 There's been no defense reports in this case, as you 25 know.</p>	<p style="text-align: right;">Page 317</p> <p>1 A I actually would love a -- a break. I 2 don't mind going a few more minutes, if that would 3 be good or -- but otherwise, I would love a break. 4 MS. O'DELL: Whenever is a good time. 5 MR. ZELLERS: Sure. I'll just finish 6 this. 7 Q (BY MR. ZELLERS) I'll hand you the 8 exhibit, Exhibit 32. 9 (Exhibit 32 was marked for identification 10 and is attached to the transcript.) 11 Q (BY MR. ZELLERS) Is that -- 12 A Thank you. 13 Q -- the -- at least some of the testing by 14 the FDA that you have seen? 15 A Yes, it is. 16 Q That testing was done by an independent 17 laboratory; is that right? 18 A I -- I -- I don't know that, but I believe 19 you. 20 Q Take -- 21 MS. O'DELL: Do you have a copy for me? 22 MR. ZELLERS: Oh, I'm so sorry. I have 23 that, yes. Sorry. 24 MS. O'DELL: Thanks. 25 Q (BY MR. ZELLERS) If you go to the second</p>

19 (Pages 314 to 317)

Rebecca Smith-Bindman, M.D.

Page 318	Page 320
<p>1 page, the second paragraph, We contracted with AMA</p> <p>2 Analytical Services of Lanham, Maryland, to conduct</p> <p>3 this laboratory service -- or strike that -- survey.</p> <p>4 Do you see that?</p> <p>5 A I don't. I'm on the right page.</p> <p>6 Q On the second page.</p> <p>7 A The second page.</p> <p>8 Q The second paragraph, the second --</p> <p>9 A Yes.</p> <p>10 Q -- sentence --</p> <p>11 A -- yes. Yes. Thank you.</p> <p>12 Q All right.</p> <p>13 A Yes.</p> <p>14 Q And at least based upon this report, no</p> <p>15 asbestos was detected in the talcum powder that was</p> <p>16 tested; is that right?</p> <p>17 A In the reports that they show, which</p> <p>18 might -- my understanding is that they had two</p> <p>19 samples of baby powder, talcum powder in this. And</p> <p>20 that in those two specimens using the testing method</p> <p>21 they used, they didn't find evidence of asbestos.</p> <p>22 MR. ZELLERS: All right. Let's take a</p> <p>23 break.</p> <p>24 THE VIDEOGRAPHER: The time is 10:47 a.m.</p> <p>25 We are now off the record.</p>	<p>1 would like -- she edits all of my publications</p> <p>2 before I submit them.</p> <p>3 Q (BY MR. ZELLERS) When we left the last</p> <p>4 session, I asked you about asbestos and whether or</p> <p>5 not asbestos is contained in talcum powder.</p> <p>6 Is there any amount of asbestos that would</p> <p>7 be safe in talcum powder products?</p> <p>8 A And the simple answer would be no, I don't</p> <p>9 think there's any amount that would be safe in</p> <p>10 talcum powder products.</p> <p>11 Q All right. Is there any amount of trace</p> <p>12 metals that would be safe in talcum powder products?</p> <p>13 MS. O'DELL: Object to the form.</p> <p>14 A I believe there would be amounts of trace</p> <p>15 metals that would be acceptable.</p> <p>16 Q (BY MR. ZELLERS) Are there any amounts of</p> <p>17 fragrance chemicals that would be safe in talcum</p> <p>18 powder products?</p> <p>19 A I believe there would be in certain</p> <p>20 categories. And in others, there would not.</p> <p>21 Q There have been no fragrance chemicals, to</p> <p>22 your knowledge, that have been found in a study to</p> <p>23 be associated with ovarian cancer, correct?</p> <p>24 MS. O'DELL: Object to the form.</p> <p>25 A I -- I know of no -- no such exploration.</p>
Page 319	Page 321
<p>1 (A break was taken from 10:47 a.m. to 1</p> <p>2 11:00.)</p> <p>3 THE VIDEOGRAPHER: It's 11:00 a.m. We are</p> <p>4 now back on the record. Here begins Media No. 2 of</p> <p>5 the deposition of Dr. Rebecca Smith-Bindman, Ph.D.,</p> <p>6 Volume II.</p> <p>7 Q (BY MR. ZELLERS) Dr. Smith-Bindman, I was</p> <p>8 handed the invoice for Chris Tachibana, which we</p> <p>9 have marked as Exhibit 33.</p> <p>10 (Exhibit 33 was marked for identification</p> <p>11 and is attached to the transcript.)</p> <p>12 Q (BY MR. ZELLERS) Is that the invoice that</p> <p>13 your copy editor provided to you?</p> <p>14 A Yes.</p> <p>15 Q Are there any other invoices that you have</p> <p>16 received from her?</p> <p>17 A No.</p> <p>18 Q Do you expect there to be any other work</p> <p>19 that Ms. Tachibana does with respect to your report?</p> <p>20 A Not with respect to my report.</p> <p>21 If I move ahead to publish these results,</p> <p>22 then I would likely reach out to her to help -- as</p> <p>23 well.</p> <p>24 THE COURT REPORTER: To help?</p> <p>25 A If we choose to publish the results, I</p>	<p>1 Q (BY MR. ZELLERS) Do you have an opinion on</p> <p>2 what type of asbestos is in talcum powder products?</p> <p>3 A I believe asbestos is sort of a family of</p> <p>4 chemicals. I think there are six that kind of get</p> <p>5 grouped together. I think all of them have been</p> <p>6 identified in talcum powder products, but I don't</p> <p>7 know the distribution of the different kinds.</p> <p>8 Q What type of asbestos is associated with</p> <p>9 ovarian cancer? And by that question, you believe</p> <p>10 that there's six subtypes of asbestos --</p> <p>11 MS. O'DELL: Object to the form.</p> <p>12 Q (BY MR. ZELLERS) -- is that generally your</p> <p>13 understanding?</p> <p>14 A It's generally my understanding.</p> <p>15 Q Are -- are you able to give us any</p> <p>16 opinions with respect to what type or types of</p> <p>17 asbestos is associated with ovarian cancer?</p> <p>18 A The -- the strongest summary of the</p> <p>19 relationship that I know about is in the IARC 2012</p> <p>20 reports.</p> <p>21 And those are from a number of different</p> <p>22 studies, including some cohort studies and case</p> <p>23 control studies.</p> <p>24 To my knowledge, I don't know that they</p> <p>25 have divided them by the type of mineral silicate</p>

20 (Pages 318 to 321)

Rebecca Smith-Bindman, M.D.

Page 322	Page 324
<p>1 fibers that were in those studies.</p> <p>2 Q What amount of asbestos exposure is</p> <p>3 associated with ovarian cancer?</p> <p>4 MS. O'DELL: Object to the form.</p> <p>5 A To the best of my knowledge, the amount</p> <p>6 that's contained within talc powder products is</p> <p>7 probably associated with -- the amount that's in</p> <p>8 there is probably the -- cancer.</p> <p>9 Q (BY MR. ZELLERS) Can you be any more</p> <p>10 definitive?</p> <p>11 A The talcum powder products that women have</p> <p>12 used is associated with ovarian cancer. And I</p> <p>13 believe that to know how much asbestos it takes to</p> <p>14 cause cancer, the easiest way to answer that is to</p> <p>15 quantify how much asbestos is within the --</p> <p>16 the powder products.</p> <p>17 So I'm not in any way an expert on this.</p> <p>18 But in the Longo report, it talked about an average</p> <p>19 of 50,000 particles of asbestos being in each</p> <p>20 gram of -- on average in each gram of baby powder</p> <p>21 products.</p> <p>22 And he estimates that in a container, that</p> <p>23 would be millions of particles, which seems like a</p> <p>24 large number to me, but -- so I don't know the</p> <p>25 amount that would be required to be carcinogenic,</p>	<p>1 A I did not.</p> <p>2 Q Would you agree that research on the</p> <p>3 potential relationship between asbestos and ovarian</p> <p>4 cancer has only considered a small number of cases?</p> <p>5 MS. O'DELL: Object to the form.</p> <p>6 A I think the IARC review on the</p> <p>7 occupational exposures to asbestos had quite a</p> <p>8 number of cancers, but I would have to go back to</p> <p>9 those studies to remember the number.</p> <p>10 Q (BY MR. ZELLERS) Did you review the Reid</p> <p>11 2011 study?</p> <p>12 A I believe that's one that I -- I reviewed.</p> <p>13 Q Do you need me to hand that to you if --</p> <p>14 A Yes --</p> <p>15 Q -- ask you a couple of questions about it?</p> <p>16 A -- please.</p> <p>17 Q Now, in the Reid 2011 paper, which we will</p> <p>18 mark as Exhibit 34 --</p> <p>19 A And is that one of the studies that</p> <p>20 Camargo included in -- I think it is -- in his</p> <p>21 systematic review? Yeah. So this is a different</p> <p>22 systematic review.</p> <p>23 (Exhibit 34 was marked for identification</p> <p>24 and is attached to the transcript.)</p> <p>25 Q (BY MR. ZELLERS) Do you recognize</p>
Page 323	Page 325
<p>1 but that's the amount that they were exposed to that</p> <p>2 was carcinogenic.</p> <p>3 Q What type of ovarian cancer is asbestos</p> <p>4 associated with?</p> <p>5 MS. O'DELL: Object to the form.</p> <p>6 A I think the most stable estimate of the</p> <p>7 association of talcum powder products with ovarian</p> <p>8 cancer is for all ovarian cancer and the</p> <p>9 meta-analysis that others did. And my summary</p> <p>10 estimate was for all ovarian cancer -- epithelial</p> <p>11 ovarian cancer, I should say.</p> <p>12 In my more limited review, I focused on</p> <p>13 serous cancer, because I think as the most common</p> <p>14 cancer -- the most common invasive cancer, it's the</p> <p>15 one where there's enough statistical power to</p> <p>16 quantify the association, so I think the data are</p> <p>17 the most compelling for serous ovarian cancer.</p> <p>18 But the overall meta-analysis looks at any</p> <p>19 cancer, and that's what we did as well.</p> <p>20 Q You -- you looked at talcum powder,</p> <p>21 correct?</p> <p>22 A Talcum powder products, yes.</p> <p>23 Q You did not undertake a Bradford Hill</p> <p>24 analysis of the literature on asbestos and ovarian</p> <p>25 cancer, correct?</p>	<p>1 Exhibit 34?</p> <p>2 A No.</p> <p>3 Q Okay. Well, Exhibit 34 is a study and --</p> <p>4 and a review by the first named author, Allison</p> <p>5 Reid.</p> <p>6 "Does Exposure to Asbestos Cause Ovarian</p> <p>7 Cancer?"</p> <p>8 A I -- I have seen this paper.</p> <p>9 Q All right.</p> <p>10 A I'm sorry. I didn't remember. So sorry.</p> <p>11 Q If you look at her conclusions -- or the</p> <p>12 author's conclusions on the right-hand side of the</p> <p>13 first page -- so I'm --</p> <p>14 A Yes.</p> <p>15 Q -- looking right here --</p> <p>16 A Yes.</p> <p>17 Q -- the relationship between asbestos</p> <p>18 exposure and ovarian cancer is not well</p> <p>19 understood -- is not as well understood as -- as</p> <p>20 that of asbestos-related diseases. Studies that</p> <p>21 have examined this issue have been limited for two</p> <p>22 major reasons.</p> <p>23 No. 1, there's a small number of cases.</p> <p>24 And No. 2, there's difficulties with diagnosis and</p> <p>25 specifically distinguishing between peritoneal</p>

21 (Pages 322 to 325)

Rebecca Smith-Bindman, M.D.

Page 326	Page 328
<p>1 mesothelioma and ovarian cancer; is -- is that 2 right? 3 MS. O'DELL: Object to the form. 4 A So this -- those are the conclusions that 5 she makes. But I -- I want just to explain what she 6 means by "small number of cases." 7 She's comparing it to the number of men 8 exposed to asbestos. Just there -- there are many 9 more men exposed to asbestos than -- than women 10 exposed to asbestos. 11 So I think -- I mean, I -- I think it's a 12 challenge, but I -- wouldn't say that there are a 13 small number of cases. 14 MR. ZELLERS: Move to strike as 15 nonresponsive. 16 Q (BY MR. ZELLERS) Would you agree that most 17 of the studies that have been done and the data that 18 exists relates to occupational exposure of asbestos 19 and ovarian cancer? 20 A Yes. I -- 21 Q All right. 22 A -- yes. 23 Q You looked at the Camargo paper 2011; is 24 that right? 25 A Yes.</p>	<p>1 author state, Further limitation of our analysis was 2 its inability to account for nonoccupational risk 3 factors for ovarian cancer other than age? 4 A Yes, I do see that. 5 Q On page 25 -- I'm sorry -- 1215. So the 6 page before the second paragraph under "Discussion," 7 they talk about Edelman 1992; is that right? 8 A Yes. 9 Q And the authors state, They concluded, 10 however, that despite the positive and significant 11 association, there was insufficient information to 12 infer that ovarian cancers were caused by 13 occupational exposure to asbestos -- 14 A I -- I'm sorry. I -- 15 Q Sure. 16 A -- I -- I'm lost. Where are we? 17 Q Okay. So do you see under "Discussion" -- 18 A Yes. 19 Q -- the second paragraph -- 20 A Yes. 21 Q -- I believe the second sentence? It 22 says, They concluded. 23 Are you with me? 24 A Yes. They are describing another 25 meta-analysis --</p>
Page 327	Page 329
<p>1 Q That study points out that there's an 2 inability to account for nonoccupational risk 3 factors for ovarian cancer in these studies other 4 than age; is that right? 5 MS. O'DELL: If -- if you remember. If 6 you need to see -- 7 A I -- I don't remember. 8 Q (BY MR. ZELLERS) All right. Do you have 9 the Camargo paper in front -- 10 A I -- 11 Q -- of you or would you like me to give it 12 to you? 13 A -- please. 14 Q Camargo 2011, we will mark as deposition 15 Exhibit 35. 16 (Exhibit 35 was marked for identification 17 and is attached to the transcript.) 18 A Thank you. 19 Q (BY MR. ZELLERS) Do you have that in front 20 of you now? 21 MS. O'DELL: Thank you. 22 A Yes, I do. 23 Q (BY MR. ZELLERS) Camargo. Take a look, if 24 you will, you know, on page 1216. The second 25 paragraph above "Conclusion," does Camargo and the</p>	<p>1 Q Yes. 2 A -- they concluded, yes. 3 Q This -- this is a review of different meta 4 -- 5 A Yeah. 6 Q -- analyses; is that right? 7 A Yes. 8 Q And they're describing Edelman 1992. And 9 they state, They concluded, however, that despite 10 the positive and significant association, there was 11 insufficient information to infer that ovarian 12 cancers were caused by occupational exposure to 13 asbestos because of concerns about tumor 14 misclassification, inappropriate comparison 15 populations, and the failure to take into account 16 for known risk factors. 17 Is that right? 18 A You're reading from Camargo, who is 19 quoting from a discussion by Edelman, so that -- 20 that's what it says. I -- I don't -- I don't know 21 that that's what Edelman says, but -- but yes, 22 that's the... 23 Q Wouldn't you expect to find higher rates 24 of other cancers in women using talc, like 25 mesothelioma, if they are being exposed to</p>

22 (Pages 326 to 329)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 330</p> <p>1 substantial amounts of asbestos?</p> <p>2 MS. O'DELL: Object to the form.</p> <p>3 A I -- I'm confused. I'm confused. Are you</p> <p>4 saying women exposed to asbestos are not getting</p> <p>5 mesothelioma?</p> <p>6 Q (BY MR. ZELLERS) Well, let me ask it this</p> <p>7 way: Are -- are women who use talc in the perineal</p> <p>8 region at greater risk of mesothelioma?</p> <p>9 A I do not know studies that have said that.</p> <p>10 Q Are women who use talc in the perineal</p> <p>11 region at greater risk of asbestosis?</p> <p>12 A In the lungs?</p> <p>13 Q Yes.</p> <p>14 A I -- I do not know those studies.</p> <p>15 Q With respect to fragrance chemicals, you</p> <p>16 have no evidence that the blood or tissue levels of</p> <p>17 any trace metals are higher in genital talc users</p> <p>18 compared to nonusers, correct?</p> <p>19 A I -- I don't know that literature at all.</p> <p>20 Q And you have no knowledge as to either the</p> <p>21 amount or concentration of different fragrance</p> <p>22 chemicals in the baby powder, correct?</p> <p>23 A I -- I do not.</p> <p>24 MR. ZELLERS: Okay. I have no further</p> <p>25 questions. My colleagues may have some questions.</p>	<p style="text-align: right;">Page 332</p> <p>1 Q Okay. So when -- if you answered a</p> <p>2 question, is it because you believe you understood</p> <p>3 it and that you felt able to answer it?</p> <p>4 A Yes.</p> <p>5 MS. O'DELL: Object to the form.</p> <p>6 Q (BY MS. BOCKUS) Okay. So before being</p> <p>7 hired in this case, you had not really looked at the</p> <p>8 association between talc and ovarian cancer; is that</p> <p>9 fair?</p> <p>10 A That's correct.</p> <p>11 Q The person who wrote to you first, do you</p> <p>12 remember if it was a male or a female, the attorney?</p> <p>13 A I think it was a women.</p> <p>14 Q Okay. And have you -- tell me what search</p> <p>15 you have done to locate that person's name.</p> <p>16 A I could probably search some more. I --</p> <p>17 I -- my correspondence with these lawyers that I</p> <p>18 have a document of on my computer is from July.</p> <p>19 But Mike reminded me that I must have met</p> <p>20 with them in June. So I could go through -- there</p> <p>21 are ways I can access older e-mails to look if</p> <p>22 that's important to you. I'm happy to try and find</p> <p>23 that person.</p> <p>24 Q I just was curious. There -- because you</p> <p>25 have nothing in the published literature about the</p>
<p style="text-align: right;">Page 331</p> <p>1 MS. BOCKUS: Could we go off the record</p> <p>2 for just a minute to move the microphone down?</p> <p>3 THE VIDEOGRAPHER: The time is 11:16 a.m.</p> <p>4 We are off the record.</p> <p>5 (A break was taken from 1:16 a.m. to 11:17</p> <p>6 a.m.)</p> <p>7 THE VIDEOGRAPHER: The time is 11:17 a.m</p> <p>8 we are now back on the record.</p> <p>9 EXAMINATION BY COUNSEL FOR THE DEFENDANTS</p> <p>10 BY MS. BOCKUS:</p> <p>11 Q Good morning, Doctor. I introduced myself</p> <p>12 yesterday, I hope. I'm not sure I did. I'm Jane</p> <p>13 Bockus. I represent Imerys in this matter.</p> <p>14 How are you feeling today?</p> <p>15 A I'm good. Thank you.</p> <p>16 Q Have you gone back to work full time since</p> <p>17 your skiing accident?</p> <p>18 A I am primarily a researcher, so I get to</p> <p>19 choose my own hours. So I have gone back to work</p> <p>20 full time, but I often leave work a little earlier</p> <p>21 and take a rest.</p> <p>22 Q Has your injury from your skiing accident</p> <p>23 affected your ability to answer all the questions</p> <p>24 you have been asked in the last day and a half?</p> <p>25 A It has not.</p>	<p style="text-align: right;">Page 333</p> <p>1 etiology of ovarian cancer, correct?</p> <p>2 A I do not. And I will tell you I asked the</p> <p>3 person who contacted me what the case was about, was</p> <p>4 it an area of my expertise.</p> <p>5 And the person who contacted me, I think,</p> <p>6 was someone who knew of me from another case. And</p> <p>7 it was my researching abilities, not my content</p> <p>8 expertise, that led her to reach out to me.</p> <p>9 Q Okay. So it was with the understanding</p> <p>10 that you would start a whole new area of research in</p> <p>11 order to answer the question; is that correct?</p> <p>12 MS. O'DELL: Object to the form.</p> <p>13 A Yes.</p> <p>14 Q (BY MS. BOCKUS) Okay. In fact, when you</p> <p>15 appeared before congress, you stated that you're a</p> <p>16 clinical radiologist and you conduct research</p> <p>17 focusing on -- or focused on assessing the risk and</p> <p>18 benefits of medical imaging, correct?</p> <p>19 A If -- if you have my testimony there, I'm</p> <p>20 going to believe you.</p> <p>21 Q And when you have given interviews or have</p> <p>22 written opinion pieces, you identify yourself as</p> <p>23 primarily a radiologist who focuses on evaluating</p> <p>24 the risks and benefits of medical imaging, correct?</p> <p>25 MS. O'DELL: Object to the form.</p>

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 334</p> <p>1 A So I have given a lot of interviews, and I 2 often identify as a professor of epidemiology and 3 biostatistics. I'm not sure what interview that you 4 are looking at. 5 I often -- often introduce myself as a 6 professor of obstetrics, gynecology, and 7 reproductive sciences. 8 And my guess is that whomever is 9 publishing the interview will choose to present me 10 in a way that they think highlights my skill. 11 But -- but my -- I'm a professor in 12 radiology and epidemiology and biostatistics, 13 obstetrics, gynecology, and a member of the Philip 14 R. Lee Institute for Health Policies Studies. 15 So I -- I get presented with whichever of 16 those first the presenter thinks might highlight my 17 expertise. 18 Q Are you board-certified in obstetrics and 19 gynecology? 20 A I'm not. 21 Q The Bradford Hill criteria, the first 22 consideration is the "strength of the association"; 23 is that correct? 24 A First criteria? Yes. 25 Q What do you consider to be a strong</p>	<p style="text-align: right;">Page 336</p> <p>1 about a quantitative association, but rather, the 2 biases and legitimacy of the association. 3 Q Are you familiar with the text "Analysis 4 of Case-Control Studies" by Breslow and Day? 5 A I -- I -- yes. 6 Q Do you find that to be a reliable text on 7 the subject of the analysis of case-control studies? 8 MS. O'DELL: Object to the form. 9 A I -- I don't know that chapter or section 10 enough to answer that question without looking at 11 it. 12 Q (BY MS. BOCKUS) But you're familiar with 13 their work? 14 A Yes. 15 Q And they're well-respected 16 epidemiologists? 17 A Yes. 18 MS. O'DELL: Object to the form. 19 Q (BY MS. BOCKUS) You make a statement in 20 your report on page 12 that the most widely accepted 21 mechanism for initiation, promotion, and progression 22 of ovarian cancer is tissue inflammation leading to 23 a series of responses that result in cancer. 24 And you have talked about that sentence a 25 bit with Mr. Zellers already.</p>
<p style="text-align: right;">Page 335</p> <p>1 association? 2 A So it overlaps a little bit with the 3 second concept of Bradford Hill in the consistency 4 of -- of the data. 5 But where the association is meaningfully 6 and legitimately documented across study designs and 7 patient populations such that the association is 8 believable and meaningful, not necessarily 9 associated with a particular point estimate of 10 association, if that's the question. 11 I don't have any particular number. It's 12 rather the entirety of the relationship, that it's a 13 meaningful quantifiable association. 14 Q Do you teach epidemiology? 15 A I do. 16 Q Can you identify textbooks that you find 17 reliable on the subject of epidemiology? 18 A The textbook that I often use to teach 19 epidemiology is a book -- I -- I'm not sure if the 20 authorship has changed over the years, but by holly 21 Cummings that talks about principles of 22 epidemiology. It's sort of the clearest version 23 that I know. 24 And -- and they -- and I haven't looked 25 this particular question up, but they wouldn't talk</p>	<p style="text-align: right;">Page 337</p> <p>1 Did you do a survey of the literature to 2 determine what was the most widely accepted 3 mechanism for initiation of ovarian cancer? 4 A I did. 5 Q And did you do a survey of the cancer 6 biology literature? 7 MS. O'DELL: Object to the form. 8 A What was the first literature you asked me 9 about? 10 Q (BY MS. BOCKUS) The literature that 11 supported your statement that the most widely 12 accepted mechanism was inflammation. 13 And you said you did a survey on the 14 inflammation literature -- or I mean on the 15 etiology -- let me start all over again. 16 Have you done a survey on articles that 17 discuss the likely mechanism for the etiology of 18 ovarian cancer? 19 A Yes, I have . 20 Q Have you -- have you -- did your survey 21 include the literature on the cancer biology -- 22 A Yes. 23 Q -- of -- 24 A Yes, it did. 25 Q -- of ovarian cancer?</p>

24 (Pages 334 to 337)

Rebecca Smith-Bindman, M.D.

Page 338	Page 340
<p>1 A Yes, it did.</p> <p>2 Q And did you find that as the issue of</p> <p>3 inflammation as an initiator of ovarian cancer is</p> <p>4 not a settled question?</p> <p>5 MS. O'DELL: Object to the form.</p> <p>6 A I -- I would acknowledge that -- that none</p> <p>7 of it is settled. It's just the most widely</p> <p>8 accepted, most widely supported, most wide -- widely</p> <p>9 enhanced view supported by the data, but I don't</p> <p>10 think the issue is settled.</p> <p>11 Q (BY MS. BOCKUS) In fact, there's still</p> <p>12 considerable research going on on the subject --</p> <p>13 A Yes --</p> <p>14 Q -- correct?</p> <p>15 A -- I think there is.</p> <p>16 Q In the next paragraph you talk about, for</p> <p>17 example, this is the middle -- there are</p> <p>18 well-described and accepted causal pathways</p> <p>19 linking in -- linking inflammation to bladder</p> <p>20 cancer, gastric cancer, colon cancer, et cetera.</p> <p>21 You would agree and you identify the</p> <p>22 inflammatory sometimes virus or whatever that's --</p> <p>23 that's well described and accepted for all of the</p> <p>24 different cancers that you list there, correct?</p> <p>25 For example, you identify toxic chemicals</p>	<p>1 with body powder use and ovarian cancer, correct?</p> <p>2 MS. O'DELL: Object to the form.</p> <p>3 A I -- I'm going to go back to say that I --</p> <p>4 I don't know what the strength of the association is</p> <p>5 with -- with these individual cancers.</p> <p>6 I -- I don't know if it's a 20 percent</p> <p>7 increase or a 500 percent increase, except for the</p> <p>8 one that I gave the example of of bladder cancer.</p> <p>9 So for bladder cancer, I gave two examples</p> <p>10 that cause inflammation of the bladder. One being</p> <p>11 toxic chemicals and the second being cigarette</p> <p>12 smoking.</p> <p>13 The toxic chemicals have a very strong</p> <p>14 relative risk of 200 or 300, where I think smoking</p> <p>15 has a relative risk of more like 1.3.</p> <p>16 And so I -- I -- I don't know it for these</p> <p>17 other cancers. But at least for bladder cancer,</p> <p>18 which I think is -- I think the second most common</p> <p>19 cancer and cigarette smoke is -- I think the</p> <p>20 association in the ballpark of 1.3.</p> <p>21 I think I have it in here. But -- so for</p> <p>22 most of these, I don't know what that number is.</p> <p>23 MS. BOCKUS: I'm going to object as</p> <p>24 nonresponsive.</p> <p>25 Q (BY MS. BOCKUS) Because the question I</p>
Page 339	Page 341
<p>1 for the etiology of bladder cancer, correct?</p> <p>2 MS. O'DELL: Object to the form.</p> <p>3 Q (BY MS. BOCKUS) Do you see where I'm</p> <p>4 reading?</p> <p>5 A I -- I don't see where you're reading</p> <p>6 exactly, but -- but I agree with you that I have</p> <p>7 given examples where we know the cause of the</p> <p>8 inflammation for many of those cancers.</p> <p>9 Q (BY MS. BOCKUS) You would agree that there</p> <p>10 is no equivalent literature linking ovarian cancer</p> <p>11 to talcum powder use, correct?</p> <p>12 MS. O'DELL: Object to the form.</p> <p>13 A I think there's a strong literature on</p> <p>14 components of the analysis. But I think for several</p> <p>15 of the examples I have given, the data are a little</p> <p>16 bit clearer and further along.</p> <p>17 So path -- HPV and cervical cancer has a</p> <p>18 longer historical data collection period when we</p> <p>19 have them --</p> <p>20 Q (BY MS. BOCKUS) And --</p> <p>21 A -- identified. So I think that's your</p> <p>22 question.</p> <p>23 Q -- so the strength of the association</p> <p>24 between HPV virus and cervical cancer is much, much</p> <p>25 stronger than any association that's been reported</p>	<p>1 asked was about the HPV virus and cervical cancer --</p> <p>2 A I don't --</p> <p>3 Q -- correct?</p> <p>4 A -- know the -- the relative --</p> <p>5 Q All right.</p> <p>6 A -- risk for that. But I -- I thought I</p> <p>7 said the only one I do know is the bladder cancer</p> <p>8 numbers.</p> <p>9 Q Has your methodology in determining what</p> <p>10 studies to include and what studies to exclude been</p> <p>11 peer reviewed in any way, shape, or form?</p> <p>12 A It has not.</p> <p>13 Q Has your math --</p> <p>14 A Oh, I'm sorry. Has my methodology been</p> <p>15 peer reviewed?</p> <p>16 Q In -- in this particular case, the method</p> <p>17 --</p> <p>18 A Okay. The method has been peer reviewed.</p> <p>19 But in this particular case, it has not.</p> <p>20 Q So no one has looked over your report and</p> <p>21 determined whether your decision -- and as I</p> <p>22 understand it, it was your decision alone, correct,</p> <p>23 as to whether to include data from a particular</p> <p>24 study or not --</p> <p>25 A Again --</p>

25 (Pages 338 to 341)

Rebecca Smith-Bindman, M.D.

Page 342	Page 344
<p>1 Q -- and --</p> <p>2 A -- it was a decision between myself and</p> <p>3 the -- and -- and -- and Dr. Hall --</p> <p>4 Q So --</p> <p>5 A -- just the two of us.</p> <p>6 Q -- okay. So did Dr. Hall participate in</p> <p>7 the decision-making process as to which of the</p> <p>8 case-control studies and the cohort studies to</p> <p>9 include and which to exclude?</p> <p>10 A It -- so it's -- it's a -- the answer is</p> <p>11 partly and partly not.</p> <p>12 So in terms of whether the studies were</p> <p>13 included in the final analysis, Dr. Hall was</p> <p>14 involved in that decision.</p> <p>15 But in terms of setting up the question to</p> <p>16 begin with, she was not involved in that. I -- I</p> <p>17 set that up.</p> <p>18 Q So other than you and Dr. Hall, has anyone</p> <p>19 been involved in the process of determining which</p> <p>20 studies were going to be involved -- in -- were</p> <p>21 going to be included in your systematic review and</p> <p>22 which were not?</p> <p>23 A Nobody else.</p> <p>24 Q Okay. And has anyone other than you and</p> <p>25 Dr. Hall even checked your work for transcription</p>	<p>1 Q Would you agree that you're -- at this</p> <p>2 point in time your report is not yet ready to be</p> <p>3 submitted for peer review?</p> <p>4 MS. O'DELL: Object to the form.</p> <p>5 A I would agree that the description in this</p> <p>6 report needs more detail, more -- to submit it to</p> <p>7 peer review. Not necessarily different work, but</p> <p>8 definitely different detail and description.</p> <p>9 Q (BY MS. BOCKUS) Have you satisfied</p> <p>10 yourself that the studies that you did include do</p> <p>11 not overlap with regard to patients; that you</p> <p>12 haven't counted the same patients multiple times?</p> <p>13 A I -- I am comfortable that I did my best</p> <p>14 to do that. But I know there were some cases where</p> <p>15 I felt like I wasn't 100 percent sure.</p> <p>16 Q And you would agree that by -- including</p> <p>17 the same cases and controls multiple times could</p> <p>18 skew the -- the data?</p> <p>19 MS. O'DELL: Object to the form.</p> <p>20 A I think that that theoretically is a</p> <p>21 concern of mine, which is why I try to you exclude</p> <p>22 them if there was overlap.</p> <p>23 On a practical level, the benefit of</p> <p>24 pooling data from multiple sources is that the final</p> <p>25 summary is less sensitive to any individual result,</p>
Page 343	Page 345
<p>1 errors?</p> <p>2 MS. O'DELL: Object to the form.</p> <p>3 A No.</p> <p>4 Q (BY MS. BOCKUS) And has anyone other than</p> <p>5 you and Dr. Hall checked your work for mathematical</p> <p>6 errors?</p> <p>7 A No.</p> <p>8 Q You excluded all of the data from the</p> <p>9 cohort studies with the exception of the earliest</p> <p>10 reported data from the Nurses' Health Study; is that</p> <p>11 correct?</p> <p>12 A Yes.</p> <p>13 MS. O'DELL: Object to the form.</p> <p>14 Q (BY MS. BOCKUS) Did you run the -- the --</p> <p>15 the numbers to determine if there would be a</p> <p>16 difference if you included the data from all the</p> <p>17 cohort studies and if you excluded them?</p> <p>18 A So the requirement to be in our review was</p> <p>19 to have a measure of regular use of talcum powder</p> <p>20 products, and those other studies didn't have</p> <p>21 something to plug into that equation.</p> <p>22 So -- so I didn't have a number from those</p> <p>23 studies to include in a sensitivity analysis. They</p> <p>24 -- they didn't report regular use, so I -- I</p> <p>25 couldn't do what you are asking me to have done.</p>	<p>1 let alone some patients that might overlap.</p> <p>2 But I agree with you that you want to</p> <p>3 avoid that because of that concern.</p> <p>4 Q (BY MS. BOCKUS) All right. Would you turn</p> <p>5 to page 35 of your study. And I am looking at</p> <p>6 the -- right in the middle of the page, the</p> <p>7 paragraph that starts with the word, Further talc</p> <p>8 particles.</p> <p>9 But I'm going to the last sentence in the</p> <p>10 paragraph.</p> <p>11 "The greater frequency at which talc</p> <p>12 particles are discovered in ovarian cancerous tissue</p> <p>13 than in normal ovarian tissue further supports that</p> <p>14 these target -- particles may be causing cancer."</p> <p>15 You don't have a source for that. You</p> <p>16 don't cite to any study. And I would like to know</p> <p>17 where you got that information.</p> <p>18 MS. O'DELL: Objection to form.</p> <p>19 A I would have to review Heller and</p> <p>20 Henderson. No. Henderson is just cancer.</p> <p>21 So I would have to review -- review</p> <p>22 Heller, but that -- I -- I -- I don't remember what</p> <p>23 the -- cite of it. I would have to look at the</p> <p>24 articles that I cite in that paragraph and see if I</p> <p>25 could remember.</p>

26 (Pages 342 to 345)

Rebecca Smith-Bindman, M.D.

Page 346	Page 348
<p>1 Q (BY MS. BOCKUS) The next statement has to 2 do with the reduction in incidence of ovarian cancer 3 after tubal ligation or hysterectomy? 4 A Yes. 5 Q Is it not correct that that statement is 6 true for both women who have used talcum powder 7 product and who -- let me ask a better question. 8 Here you're talking about that the 9 elevated -- that studies that look at the risk of 10 ovarian cancer associated with powder products 11 report a reduction in risk after hysterectomy or 12 tubal ligation, correct? 13 A Yes. 14 Q Isn't that also true in the general 15 population for all women, that there -- whether they 16 have used talcum powder products or not, that their 17 risk of ovarian cancer is reduced by hysterectomy or 18 oophorectomy -- 19 A Yes. 20 Q -- or tubal ligation? I'm sorry. 21 A Yes. It's even more reduced by 22 oophorectomy. 23 Q Well, sure. I misspoke. 24 MS. BOCKUS: I believe that's all the 25 questions I have. Thank you.</p>	<p>1 attorney who represents Defendant Personal Care 2 Products Council. 3 So for purposes of this deposition when I 4 reference "Personal Care Products Council," I mean 5 PCPC or CPFA or any of its predecessors. Is that 6 okay? 7 A Yes. 8 Q So I want to turn to Exhibit 15, which is 9 your reference list. And that reference list is 10 Exhibit B of your expert report; is that correct? 11 A Yes. 12 Q And if you can turn to page 19 of that 13 reference list. And just let me know when you're 14 there. 15 A I am there. 16 Q And if you go about 75 percent of the way 17 down, there's a reference to a PCPC document. 18 Do you see that? 19 A Yes. 20 Q Do you happen to know what that document 21 is? 22 A I do not. 23 Q Did you rely on this document -- 24 A You would have to -- 25 MS. O'DELL: Object to the form. Excuse</p>
Page 347	Page 349
<p>1 MS. O'DELL: Why don't we go off the 2 record. I'm sorry. Do you -- 3 MR. ZELLERS: No. 4 MR. BILLINGS-KANG: I may have two or 5 three questions. 6 MS. O'DELL: Oh, sorry, James. Yeah, 7 please. 8 THE VIDEOGRAPHER: We are still on? 9 MS. O'DELL: Yes. 10 THE VIDEOGRAPHER: Do we want to go off? 11 MR. BILLINGS-KANG: Yeah. 12 MS. BOCKUS: We need to go off to move the 13 mic. 14 THE VIDEOGRAPHER: The time is 11:37 a.m. 15 We are going off the record. 16 (A break was taken from 11:37 a.m. to 17 11:40 a.m.) 18 THE VIDEOGRAPHER: The time is 11:40 a.m. 19 We are now back on the record. 20 EXAMINATION BY COUNSEL FOR THE DEFENDANTS 21 BY MR. BILLINGS-KANG: 22 Q Good morning, Dr. Smith-Bindman. How are 23 you? 24 A Good. 25 Q My name is James Billings-Kang. I'm an</p>	<p>1 me. Object to the form. If -- if -- 2 A -- you would have to tell me what it is to 3 know if -- 4 MS. O'DELL: -- or show it to her if 5 you -- 6 MR. BILLINGS-KANG: Sure. 7 MS. O'DELL: -- have a question about it. 8 Q (BY MR. BILLINGS-KANG) But for purposes of 9 formulating your opinion in the expert report, did 10 you rely on any PCPC-produced documents? 11 MS. O'DELL: Object to the form. 12 A You would have to show -- 13 MS. O'DELL: Put -- 14 A -- it to me. 15 MS. O'DELL: -- just put it in front of 16 her if you're going to ask her a question about it 17 so she can -- 18 Q (BY MR. BILLINGS-KANG) I'm just asking: 19 Based on your memory, do you recall using any 20 PCPC-produced document to formulate your opinion. 21 MS. O'DELL: I would -- I would just 22 object to the form. 23 Q (BY MR. BILLINGS-KANG) That's -- 24 MS. O'DELL: None of -- 25 Q (BY MR. BILLINGS-KANG) -- that's fine.</p>

27 (Pages 346 to 349)

Rebecca Smith-Bindman, M.D.

Page 350	Page 352
<p>1 You can answer --</p> <p>2 MS. O'DELL: None of that --</p> <p>3 Q (BY MR. BILLINGS-KANG) -- yes or no, if</p> <p>4 you remember.</p> <p>5 MS. O'DELL: -- none of us would be</p> <p>6 expected to remember a document based on a Bates</p> <p>7 number.</p> <p>8 Q (BY MR. BILLINGS-KANG) Well, I'm asking</p> <p>9 her just generally PCPC-produced documents, if she</p> <p>10 relied on any of those --</p> <p>11 MS. O'DELL: Objection.</p> <p>12 Q (BY MR. BILLINGS-KANG) -- to formulate her</p> <p>13 opinion?</p> <p>14 MS. O'DELL: Object to the form. I'm</p> <p>15 putting that --</p> <p>16 MR. BILLINGS-KANG: Sure.</p> <p>17 MS. O'DELL: -- that Bates number in front</p> <p>18 of her. And if you --</p> <p>19 MR. BILLINGS-KANG: Sure.</p> <p>20 MS. O'DELL: -- remember, you remember.</p> <p>21 A This is a document that lists different</p> <p>22 research studies that have been done over time. Is</p> <p>23 that the document that we're --</p> <p>24 Q (BY MR. BILLINGS-KANG) Well, I -- I'm not</p> <p>25 too sure. This is a document you listed in the</p>	<p>1 itself.</p> <p>2 Q Just --</p> <p>3 A I don't remember --</p> <p>4 Q -- the document --</p> <p>5 A -- seeing --</p> <p>6 Q -- itself.</p> <p>7 A -- this -- I don't remember seeing this</p> <p>8 document.</p> <p>9 Q Okay. You can -- you can put that away.</p> <p>10 And I will go to your expert report that's</p> <p>11 Exhibit 2, page 14. Just let me know when --</p> <p>12 A I'm there.</p> <p>13 Q -- you're there. And this -- the first</p> <p>14 paragraph under "Asbestos," it's about halfway in</p> <p>15 that first paragraph beginning with, Because of</p> <p>16 concern that asbestos was present in talcum powder</p> <p>17 products in the known carcinogenicity of asbestos,</p> <p>18 it has been reported that voluntarily guidelines</p> <p>19 were established by the cosmetic industry in 1976 to</p> <p>20 limit the content of asbestos fibers in commercial</p> <p>21 talc preparations.</p> <p>22 Did I read that correctly?</p> <p>23 A You did.</p> <p>24 Q And these are your words, correct?</p> <p>25 A Yes, they are.</p>
Page 351	Page 353
<p>1 reference list.</p> <p>2 A I -- I'm just trying to make sure that I'm</p> <p>3 looking at the document that you are --</p> <p>4 Q According to your counsel, this is what's</p> <p>5 been identified on page 19 of the reference list.</p> <p>6 A I -- I do not remember this document.</p> <p>7 This --</p> <p>8 Q Okay.</p> <p>9 A -- document is just a list of studies.</p> <p>10 Q So you do not recall whether you relied on</p> <p>11 this document in formulating your opinion?</p> <p>12 A My --</p> <p>13 MS. O'DELL: Object to the form.</p> <p>14 A -- opinion is not based on the -- on a --</p> <p>15 a list of studies.</p> <p>16 Q (BY MR. BILLINGS-KANG) Okay. So that's --</p> <p>17 that's a -- that's a yes, you do not -- you did not</p> <p>18 rely on this document in formulating your opinion?</p> <p>19 A I -- I don't remember seeing this</p> <p>20 document. As I'm going through this document, there</p> <p>21 are a lot of studies that I reviewed that I did rely</p> <p>22 on.</p> <p>23 So I don't know if you're asking me if I</p> <p>24 relied specifically on some of the items in here</p> <p>25 that I have relied on or the -- this document</p>	<p>1 Q And what did you mean by "voluntarily</p> <p>2 guidelines"?</p> <p>3 A I -- I have read a lot about the</p> <p>4 guidelines. And it -- the idea was that the</p> <p>5 industry decided to self-regulate and to do what</p> <p>6 they could to remove the asbestos, is my</p> <p>7 understanding of what that was as opposed to being</p> <p>8 required to submit testing to document that they had</p> <p>9 done so.</p> <p>10 Q And -- and what did you rely upon for this</p> <p>11 particular sentence?</p> <p>12 A This particular sentence is repeated in --</p> <p>13 in at least half of the papers that I have read that</p> <p>14 are epidemiology papers.</p> <p>15 It's repeated in all of the news studies.</p> <p>16 It's repeated in reports by consumer organizations,</p> <p>17 by the FDA, by the recent Canadian report, which I</p> <p>18 didn't have in hand.</p> <p>19 But it's something that I -- I have read a</p> <p>20 lot -- a great deal, that there were voluntarily</p> <p>21 standards that were established by the industry.</p> <p>22 Q And so did you read any publication or</p> <p>23 whatever reliance materials that you had that</p> <p>24 described these guidelines as anything else other</p> <p>25 than voluntarily guidelines?</p>

28 (Pages 350 to 353)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 354</p> <p>1 A I -- I -- I did not. I looked for 2 documents like that. I was not able to find them. 3 Required -- requirements, I was not able to find. 4 MR. BILLINGS-KANG: Okay. That's all I 5 have. 6 MS. O'DELL: Why don't we take a short 7 break. 8 THE VIDEOGRAPHER: The time is 11:45 a.m. 9 We are now off the record. 10 (A break was taken from 11:45 a.m. to 11 12:15 p.m.) 12 THE VIDEOGRAPHER: The time is 12:15 p.m. 13 We are now back on the record. 14 EXAMINATION BY COUNSEL FOR THE PLAINTIFFS 15 BY MS. O'DELL: 16 Q Dr. Smith-Bindman, I have just a few 17 questions for you. First, during all of your work 18 in this case, was it your understanding that you 19 were serving as an expert consultant? 20 A Yes. 21 Q And you know, throughout the early 22 meetings in June, I believe, of 2017, where you met 23 with Plaintiffs' counsel, did Plaintiffs' counsel 24 provide information regarding their theories of the 25 talcum powder litigation?</p>	<p style="text-align: right;">Page 356</p> <p>1 MR. ZELLERS: Objection, form. 2 Q (BY MS. O'DELL) Let me strike that and 3 start again. Did your meta-analysis replicate what 4 had been published in the literature? 5 A The -- 6 MR. ZELLERS: Form. 7 A -- the results of my meta-analysis and the 8 previous ones are nearly identical. So yes, it was 9 a very close replication. 10 Q (BY MS. O'DELL) And you have mentioned 11 your intent to publish your -- your meta-analysis, 12 your systematic review. And I believe you testified 13 that in the published version, you would add 14 additional detail. 15 What did you mean by that? 16 A So the analysis that I have done is 17 complete. But the presentation of the results in a 18 paper would require more beautiful graphics, would 19 require explaining our inclusion and exclusion 20 criteria more fully than I did in this published 21 report. Things like that. 22 And that actually is a substantial part of 23 the writing of a scientific paper, sort of 24 explaining every step of what you did, and so I 25 would have to do more of that to publish this study.</p>
<p style="text-align: right;">Page 355</p> <p>1 A Yes. 2 Q And have you been paid by Plaintiffs' 3 counsel for all the work that you have billed in 4 this case? 5 A Yes, I have. 6 Q Okay. You have been asked a number of 7 questions about the meta-analysis, the systematic 8 review that you performed on the regular use of -- 9 of talcum powder. 10 Would you have reached your opinions in 11 this case without having performed that analysis? 12 A My systematic review ended up with the 13 same estimates as essentially all of the other 14 well-done systematic reviews. 15 And it was very helpful for me to confirm 16 the results. But yes, it's the same as the other 17 studies, and so my -- my conclusion about the 18 causality of talcum powder products and ovarian 19 cancer would be exactly the same, even without mine. 20 It just made me a little more comfortable 21 that I was certain about the -- the results 22 presented by other people. 23 Q And in a sense, the analysis that you did 24 replicated the work that had been published in the 25 -- in the literature?</p>	<p style="text-align: right;">Page 357</p> <p>1 Q Is there sufficient detail in the -- in 2 your report regarding your methodology, as well as 3 in the documentation provided in the spreadsheets 4 to -- for someone to replicate the work that you 5 have done? 6 MR. ZELLERS: Objection, form. 7 A I believe that if someone used the 8 software that we said and had the inclusion criteria 9 that we led out -- set out, that they would get the 10 -- the same results as we got. 11 And I think the fact that our review 12 provides the same results as other systematic 13 reviews sort of, you know, also supports that. But 14 yes, I think someone could easily replicate our -- 15 our analysis. 16 Q (BY MS. O'DELL) Okay. You were asked a 17 number of -- before I do that, let me ask you: Can 18 there be multiple causes of ovarian cancer? 19 A Absolutely. I -- I describe in the 20 report, a whole number of different risk factors for 21 ovarian cancer. 22 Q And in a -- in a patient -- hypothetically 23 in a patient who has a BRCA1 mutation, possibly has 24 other risk factors for ovarian cancer, and also uses 25 talcum powder products, under those circumstances,</p>

29 (Pages 354 to 357)

Rebecca Smith-Bindman, M.D.

Page 358	Page 360
<p>1 would talcum powder products be a contributing cause 2 of her cancer? 3 MR. ZELLERS: Objection, form. 4 A I think patients can have multiple risk 5 factors and causes of -- of cancer. Some causes, 6 you would imagine, would be quite synergistic. 7 So having both together would be worse 8 than twice having either of those alone. So it 9 would be worse than having -- it -- it would be more 10 than double the initial, because they would be 11 basically enhancing. 12 So if -- if some risk factors caused lots 13 of oxidative stress and another enhanced that 14 oxidative stress and prevented repair or cell 15 apoptosis, you would get even more impact. 16 So yes, I would say multiple risk factors 17 for most diseases occur concurrently, and sometimes 18 they enhance or are synergistic. 19 Q (BY MS. O'DELL) Can asbestos be inhaled 20 and cause ovarian cancer? 21 MR. ZELLERS: Objection, form; foundation. 22 A Absolutely. The -- the IARC 2012 report 23 was primarily on the basis of inhalation of 24 asbestos. 25 Q (BY MS. O'DELL) Can fibrous talc be</p>	<p>1 not disclosed in Dr. Smith-Bindman's expert report. 2 A Can I read? Just on page 14, The results 3 were consistent, significant, and documented a 4 strong and compelling causal association between 5 exposure to asbestos and ovarian cancer largely 6 result in the association from cohort studies of 7 women with substantial occupational exposures. 8 That -- that was the -- 9 Q (BY MS. O'DELL) Okay. Let me -- let me 10 ask you to -- to turn, Dr. Smith-Bindman, to the 11 Langseth paper that was marked as Exhibit 30 by 12 counsel for J&J. 13 And specifically to turn to page 2 of the 14 paper to Figure 1. 15 A Yes. 16 Q You were asked a number of questions about 17 whether the studies that had confidence intervals 18 that cross one were essentially by chance. In other 19 words, they -- they did not speak to a potential 20 increased risk in ovarian cancer as a result of 21 talcum powder use. 22 Are the -- what's your analysis of those 23 studies and whether, as counsel put it, it was 24 equivalent to a coin toss? 25 A So if there was no relationship between</p>
Page 359	Page 361
<p>1 inhaled and cause ovarian cancer? 2 A I -- 3 MR. ZELLERS: Objection, form; foundation. 4 A -- yes. 5 Q (BY MS. O'DELL) And what's your basis for 6 that statement? 7 MR. ZELLERS: Same objections. None of 8 this was in her report. None of this has been in 9 her opinions. 10 These are all new opinions. So inhalation 11 has not been any part of her testimony or her 12 opinion. 13 MS. O'DELL: Inhalation is mentioned in 14 her report. 15 A I -- I -- you know, the -- the chapter on 16 asbestos and occupational exposure and IARC report 17 is -- is about inhalation. 18 I'm not sure if I -- I was explicit about 19 the route, but that is where the data come from for 20 asbestos, as well as fibrous talc. 21 And those articles talk about the fact 22 that there might be other exposures in addition, but 23 they're primarily inhalation studies. 24 MR. ZELLERS: Again, object to what the 25 defense views as a completely new opinion that was</p>	<p>1 ovarian cancer and exposure to talcum powder 2 products, you would expect the forest plot in 3 Figure 1 to have half of the point estimates be 4 above one, saying there's a risk; and half of the 5 point estimates being below one, saying there isn't 6 a risk. 7 In fact, every one of the studies on this 8 table is at or above one. It's to the right. So to 9 get that by chance is highly, highly, highly 10 unlikely. 11 The best estimate is -- the point estimate 12 in all of those are very different than one. 13 And so to call that by chance doesn't make 14 sense. The fact that for an individual study, the 15 confidence interval overlap one doesn't mean it's by 16 chance. 17 So again, by chance would mean half the 18 studies have a positive association, half have a 19 protective. 20 And in fact, every one of the studies has 21 a value that's either substantially greater than one 22 or just a little greater than one. 23 Q Okay. You were asked questions about 24 starting -- in reference to the Langseth paper you 25 were asked questions about the -- the pooled odds</p>

Rebecca Smith-Bindman, M.D.

Page 362	Page 364
<p>1 ratio for hospital-based studies and the focus on 2 that finding being that it was not a statistically 3 significant increased risk. 4 Did the Berge paper also look at a pooled 5 analysis of the hospital-based studies? 6 A She did. If you look at Table 2, Table 2 7 shows the results of the case-control studies that 8 were hospital based versus community based. 9 And those individual group of 10 hospital-based studies are statistically 11 significant. 12 But I would point out that in this case 13 the -- they report the relative risk of a hospital 14 based versus community based. They're relatively 15 similar. They're both significant, and they're 16 relatively similar, which is what I concluded from 17 Langseth. They're very similar. 18 Q Okay. You were asked about studies 19 relating to migration. And the specific -- the 20 specific question, as I wrote it down was: Is there 21 a study that demonstrates talc on the -- applied to 22 the perineum, traveling to the -- or migrating to 23 the ovary, and you said, No. 24 What evidence are you relying on to 25 support your opinion that talcum powder can migrate</p>	<p>1 There have been studies of sperm, both 2 living and dead, going in both directions. So it's 3 not just the mobile sperm, but the dead sperm. 4 Carbon particles -- you know, a tiny 5 study -- but have been shown to move -- radioactive 6 material has been seen to move. Material on gloves 7 has been seen. 8 So it's a wide-open system. The idea that 9 we think of that as being a barrier system is just 10 false. 11 Now, I don't know of an individual study 12 that has put talc on the perineum. I think that's, 13 unfortunately, not an ethical study to do. And I 14 don't know of such a study or why you would do such 15 a study. 16 But to think that there's any barrier 17 between the perineum and the vagina makes no sense 18 whatsoever. 19 Q Let me transition to talk about 20 inflammation for a moment, and specifically 21 inflammation as a cause of ovarian cancer first. 22 What evidence are you relying on to 23 support your opinion that inflammation -- chronic 24 inflammation causes ovarian cancer? 25 A Okay. So there's an enormous amount of</p>
Page 363	Page 365
<p>1 when applied -- applied to the genital area to the 2 ovary? 3 A So I was asked a very narrow question, is 4 there a study that talks about transport from the 5 perineum. 6 But in fact, there is extensive evidence 7 that particles from the perineum could get to the 8 ovary and do get to the ovary. 9 And part of that is the perineum is 10 basically equivalent to the vagina. It is one open 11 system to the ovary. 12 And so my evidence for that is 13 several-fold. First, I'm a clinical radiologist, 14 and I do a lot of procedures in women where I am 15 putting catheters in the vagina and injecting fluid 16 that goes to the uterus, to the tubes. I watch the 17 fluid spill. It's a wide-open system. 18 Occasionally patients have complications 19 that don't let me do that, and I might inject fluid 20 literally on the perineum to get a backlash to the 21 ovaries. And it's a wide-open connected system. 22 All of our textbooks talk about it being a 23 bi-directional system. You know, infection goes 24 both directions. Retrograde menstruation and 25 menstruation go both directions.</p>	<p>1 literature that understands what we see when there's 2 inflammation, what kind of changes you see on a 3 cellular level. 4 So you see increase in pro oxidation, a 5 reduction in antioxidation. You see increase in 6 cell turnover, reduction in cell death, expression 7 of inflammatory agents, cellular changes at the DNA 8 level that leads to greater expression. 9 We -- we understand those pathways. And 10 those pathways occur both with talc exposure and in 11 the setting of things that cause ovarian cancer. 12 So I -- in my reference list, I reference 13 a whole bunch of references -- Saed references, 14 Shawn (phonetic) references, Ness references. 15 There's really enormous numbers of references. 16 I -- in my documents I have Shukla 17 references, Buz'Zard references, Hamilton references 18 that talk away sort of these inflammatory pathways 19 and biologic mechanisms that lead to changes that go 20 along with inflammation. 21 Q I know you have reviewed Dr. Saed's 22 research in regard to whether talcum powder causes 23 inflammation in vitro. 24 First, let me ask you this: Does 25 Dr. Saed's work support the conclusion that</p>

31 (Pages 362 to 365)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 366</p> <p>1 Johnson's baby powder causes inflammation? 2 MR. ZELLERS: Objection, form. 3 A So Saed specifically looked at Johnson 4 baby powder, so his results specifically pertained 5 to Johnson baby powder. 6 He looked at several different measures 7 that -- I have just mentioned inflammation. So he 8 looked specifically at oxidative stress, the up 9 regulation or down regulation of -- 10 THE COURT REPORTER: The? 11 A -- up regulation or pro oxidants, down 12 regulation of antioxidants. He looked at cell 13 proliferation. He looked at SNPS point mutations 14 that are associated with this. 15 THE COURT REPORTER: Snips? 16 A S N P S, SNPS. 17 THE COURT REPORTER: Because you're facing 18 that way, and the mic is here. Thanks. 19 A And showed substantial changes to talcum 20 powder to all of these. I -- I was really quite 21 impressed with the consistency in these markers of 22 inflammation. 23 Some of them overlap clinical markers we 24 use. Like CA125 went up very strongly just like it 25 goes up for ovarian cancer.</p>	<p style="text-align: right;">Page 368</p> <p>1 do that. That's beyond me. But that's what this 2 whole model is, to try to help you understand what 3 the effect mechanistically is from these changes. 4 Q (BY MS. O'DELL) And is the use of that 5 model in scientific research generally accepted? 6 A Highly. 7 MR. ZELLERS: Objection, form. 8 A My understanding is that is the basis for 9 much of the research that comes -- that happens at 10 my research institution. 11 Q (BY MS. O'DELL) Just to make sure that the 12 record is clear, Dr. Smith-Bindman, in -- I asked 13 the question: Is the use of that model in 14 scientific research generally accepted? I'm not 15 sure your answer came through. What's your answer? 16 MR. ZELLERS: For your -- just objection, 17 form. Go ahead. 18 A Yes. I -- I said that that's a very 19 common model at UCSF. 20 Q Okay. 21 MS. O'DELL: I have nothing further. 22 Thank you. 23 MR. ZELLERS: Let's take a break for a 24 couple of minutes. 25 THE VIDEOGRAPHER: The time is 12:34 p.m.</p>
<p style="text-align: right;">Page 367</p> <p>1 So he very clearly showed this. And the 2 results he showed were not different than those that 3 Shukla showed, that Buz'Zard showed, that -- the 4 expression in genes. 5 He -- he just had it in a very compelling 6 experiment where he showed dose response, where he 7 showed the control didn't have the changes, but that 8 the talc powder products did have the changes. 9 And so he identified, in this cellular 10 cell line model, all of the changes that you would 11 expect from inflammation. So I think the results 12 were very compelling. 13 I -- I was asked if kind of that 14 experiment has any relevance in humans. And I would 15 say it would be nice to do that experiment in 16 humans. 17 But you can't do that experiment in 18 humans. And that's what -- 19 THE COURT REPORTER: Wait. 20 A -- you can't do such an experiment in 21 humans. So -- so that is what sort of cellular 22 studies are -- are meant to approximate. 23 There's no direct translation, so how much 24 you put in the cell versus how much you put in the 25 patient, I -- you know, I don't know how you would</p>	<p style="text-align: right;">Page 369</p> <p>1 We are now off the record. 2 (A break was taken from 12:34 p.m. to 3 12:41 p.m.) 4 THE VIDEOGRAPHER: The time is 12:41 p.m. 5 We are now back on the record. 6 EXAMINATION BY COUNSEL FOR THE DEFENDANTS 7 BY MS. BOCKUS: 8 Q Doctor, you made a comment about the fact 9 that there can be a synergistic effect between 10 different risk factors; is that correct? 11 A Yes. 12 Q That is something that can be studied, 13 correct? 14 A Yes. 15 Q There are studies that can be designed to 16 determine whether there's a synergistic effect 17 between, say, BRCA mutation carriers and women who 18 have regularly used talcum powder -- 19 A Yes. 20 Q -- correct? 21 That study has not been done, correct? 22 A Not that I know of. 23 Q In fact, are you familiar or aware of any 24 studies that have looked for a synergistic effect 25 between regular talc use and any other risk factors</p>

32 (Pages 366 to 369)

Rebecca Smith-Bindman, M.D.

<p style="text-align: right;">Page 370</p> <p>1 for ovarian cancer?</p> <p>2 MS. O'DELL: Object to the form.</p> <p>3 A I would have to look through my papers</p> <p>4 with that question in mind. I know some of the</p> <p>5 papers have looked at BRCA, but I can't remember if</p> <p>6 they sort of stratified the results by -- with or</p> <p>7 without BRCA, so I -- I'm not sure of the answer to</p> <p>8 that.</p> <p>9 I was more speaking about, from work that</p> <p>10 I do, the idea of synergy between risk factors. And</p> <p>11 one of those is BRCA and radiation exposure. So</p> <p>12 I -- I -- I meant generally it can be the case. I</p> <p>13 didn't mean to suggest we know what it is for this.</p> <p>14 Q (BY MS. BOCKUS) Okay. Then you spoke</p> <p>15 about the female reproductive system being a</p> <p>16 wide-open system.</p> <p>17 What procedure are you doing when you are</p> <p>18 putting fluid on a women's perineum to see if it</p> <p>19 goes to the ovaries?</p> <p>20 A I apologize. So the primary procedures</p> <p>21 would be a hysterosonogram, which we're putting</p> <p>22 water into the uterus and the tubes mostly to look</p> <p>23 for patency.</p> <p>24 But it turns out we end up needing to do</p> <p>25 procedures in postop patients, not infrequently,</p>	<p style="text-align: right;">Page 372</p> <p>1 Q Do you know if anything about what you</p> <p>2 just described has any correlation to the way in</p> <p>3 which women use talcum powder in their perineal</p> <p>4 region?</p> <p>5 MS. O'DELL: Object to the form.</p> <p>6 A I -- I don't know what -- how women use</p> <p>7 talcum powder on their perineum.</p> <p>8 Q (BY MS. BOCKUS) Do you know what</p> <p>9 percentage of sperm that are placed in a women's</p> <p>10 vagina make it to the ovaries?</p> <p>11 A Only from child cartoons that make it seem</p> <p>12 like it's a competitive race. But percentagewise, I</p> <p>13 don't know.</p> <p>14 Q Do you have any reason to believe that</p> <p>15 talc makes it from the vagina to the ovaries in</p> <p>16 greater percentage than sperm?</p> <p>17 A I -- I -- I would guess that that's not</p> <p>18 the case.</p> <p>19 MS. BOCKUS: That's all I have.</p> <p>20 MR. ZELLERS: I have just a couple.</p> <p>21 EXAMINATION BY COUNSEL FOR THE DEFENDANTS</p> <p>22 BY MR. ZELLERS:</p> <p>23 Q Dr. Smith-Bindman, did you discuss with</p> <p>24 Plaintiffs' counsel, calling Dr. Hall on our break</p> <p>25 between yesterday's first session and today's</p>
<p style="text-align: right;">Page 371</p> <p>1 where we might be looking for connections between</p> <p>2 different structures, preop or postop.</p> <p>3 In the ballpark of 10 percent of women to</p> <p>4 20 percent have cervical stenosis, and you can't</p> <p>5 catheterize.</p> <p>6 Or there might be some reason we don't</p> <p>7 want to catheterize or put the tubes in the vagina.</p> <p>8 We might put the tube directly on the perineum and</p> <p>9 see if we can create kind of a -- a way to keep,</p> <p>10 let's say, a balloon in place and then inject in a</p> <p>11 retrograde fashion.</p> <p>12 So it feels like it comes out probably</p> <p>13 every couple of months. But we're actually pretty</p> <p>14 far from the cervix. And we're injecting usually</p> <p>15 water or sometimes contrast and then looking mostly</p> <p>16 with ultrasound, but sometimes with fluoroscopy.</p> <p>17 Q And when you say "inject," that means with</p> <p>18 some degree of pressure, you're putting the water or</p> <p>19 other fluid into the vagina?</p> <p>20 A There is some degree of pressure, yes.</p> <p>21 Q And when you do that, is the patient's</p> <p>22 head lower than her hips?</p> <p>23 A Not -- not usually, no.</p> <p>24 Q Is she on her back?</p> <p>25 A Yes.</p>	<p style="text-align: right;">Page 373</p> <p>1 session?</p> <p>2 MS. O'DELL: I'm going to ask -- ask</p> <p>3 you -- instruct you not to answer questions</p> <p>4 regarding discussions with counsel.</p> <p>5 MR. ZELLERS: The defense agreed to split</p> <p>6 this deposition of Dr. Smith-Bindman over two days</p> <p>7 on the expressed condition that the extended break</p> <p>8 not be used for preparation.</p> <p>9 The witness and Plaintiffs' counsel</p> <p>10 violated that understanding. Further, it's entirely</p> <p>11 inappropriate for an expert witness to consult with</p> <p>12 a consulting expert during a break.</p> <p>13 We move to strike all of</p> <p>14 Dr. Smith-Bindman's testimony and will take the</p> <p>15 issue to court.</p> <p>16 MS. O'DELL: The record is clear that</p> <p>17 counsel did not speak with Dr. Smith-Bindman last</p> <p>18 night. There was no preparation done between the</p> <p>19 conclusion of the deposition yesterday and the</p> <p>20 beginning of the deposition this morning. I think</p> <p>21 the record has been clear on that.</p> <p>22 That was -- we agreed to do that. We had</p> <p>23 not -- we were not compelled to do that. Because as</p> <p>24 counsel is aware, the deposition protocol allows</p> <p>25 both parties, when they're putting up their</p>

Rebecca Smith-Bindman, M.D.

Page 374

1 respective witnesses, to confer with the witness.
2 And we did confer with Dr. Smith-Bindman
3 prior to the deposition this morning for about
4 10 minutes, and that's perfectly within our rights,
5 and so we would oppose any such motion.
6 MR. ZELLERS: Done? We are concluded.
7 THE VIDEOGRAPHER: The time is 12:48 p.m.
8 We are now off the record.
9 (TIME NOTED: 12:48 p.m..)

Page 376

1 I, MARY J. GOFF, CSR No. 13427, Certified
2 Shorthand Reporter of the State of California,
3 certify;
4 That the foregoing proceedings were taken
5 before me at the time and place herein set forth, at
6 which time the witness declared under penalty of
7 perjury; that the testimony of the witness and all
8 objections made at the time of the examination were
9 recorded stenographically by me and were thereafter
10 transcribed under my direction and supervision; that
11 the foregoing is a full, true, and correct
12 transcript of my shorthand notes so taken and of the
13 testimony so given;
14 That before completion of the deposition,
15 review of the transcript () was (XX) was not
16 requested: () that the witness has failed or
17 refused to approve the transcript.
18 I further certify that I am not financially
19 interested in the action, and I am not a relative or
20 employee of any attorney of the parties, nor of any
21 of the parties.
22 I declare under penalty of perjury under the
23 laws of California that the foregoing is true and
24 correct, dated this day of , 2019.

Page 375

1
2
3
4 I, REBECCA SMITH-BINDMAN, M.D., do hereby
5 declare under penalty of perjury that I have read
6 the foregoing transcript; that I have made any
7 corrections as appear noted, in ink, initialed by
8 me, or attached hereto; that my testimony as
9 contained herein, as corrected, is true and correct.
0 EXECUTED this _____ day of _____,
1 20____, at _____, _____
(City) (State)

REBECCA SMITH-BINDMAN, M.D.
VOLUME II

Page 377

PAGE	LINE	FROM	TO
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

 REBECCA SMITH-BINDMAN, M.D., VOLUME II
 Subscribed and sworn to before me
 this ____ day of _____, 2019.

 Notary Public

A				
a.m	accurate	258:17	amounts	antioxidative
246:9 253:3,9	282:11	age	313:19 320:14,16	303:13
318:24 319:1,3	accurately	327:4 328:3	330:1	Antonio
331:3,5,6,7	282:18	agent	analyses	249:8
347:14,16,17,18	acknowledge	289:22	284:3 329:6	apologize
354:8,10	275:14 338:6	agents	analysis	256:25 262:2
abilities	action	295:23 365:7	254:21 267:14,17	263:19 370:20
333:7	376:19	agree	284:9 323:24	apoptosis
ability	active	263:11 278:24	328:1 336:3,7	301:6 302:8 358:15
265:3 331:23	286:13,15,15,23	280:19,24 282:1	339:14 342:13	appear
able	294:18	285:10 288:10	343:23 355:11,23	375:7
264:25 321:15	actual	289:22 292:18	356:16 357:15	APPEARANCE
332:3 354:2,3	268:14 301:22	294:15 296:20,23	360:22 362:5	249:1
Abrams	acute	301:11 303:6	Analytical	APPEARANCES
246:7	289:13 291:3,13,16	306:9,21 310:9	318:2	247:1 248:1 250:1
absolute	291:19	324:2 326:16	analyze	appeared
310:14,22	add	338:21 339:6,9	284:18	333:15
absolutely	356:13	344:1,5,16 345:2	ancillary	appears
258:7 276:1 357:19	added	agreed	263:16	277:5
358:22	257:21	373:5,22	Andrew	apples
absorbency	addition	agreeing	250:24 253:6	274:6,6
293:16	260:24 298:8	292:19	Angeles	application
abstract	359:22	ahead	248:9	287:5,13
298:10,21,22,25	additional	319:21 368:17	annotated	applied
abstracted	257:17 259:24	Alabama	257:21 262:8	293:20 362:21
282:13	260:15,15 261:9	247:9	answer	363:1,1
abstracts	356:14	Allen	265:18,25 278:16	apply
298:11	addressed	247:4	302:13 303:4	301:21
acceptable	315:21	Allison	320:8 322:14	approach
320:15	adhesions	325:4	331:23 332:3	279:24 280:8
accepted	287:11 293:21	allow	333:11 336:10	approve
294:2 336:20 337:2	adjust	267:20	342:10 350:1	376:17
337:12 338:8,18	308:16,18	allowed	368:15,15 370:7	approximate
338:23 368:5,14	adjusted	266:16	373:3	272:18 367:22
access	307:25 308:2,14,22	allows	answered	approximately
332:21	308:23	373:24	293:24 316:10,12	260:7,23
accident	adjustments	alternative	332:1	aqua
331:17,22	308:3	293:7	answering	258:2
account	adolescence	AMA	267:24 273:11	area
301:1,4 327:2	307:1,7	318:1	answers	285:5,12,17 287:19
328:2 329:15	advantages	amount	305:19	294:18 333:4,10
accounting	262:19	290:12,16,17,18	antiinflammatory	363:1
284:15	affect	292:13 293:4	295:23	Arps
accuracy	288:11	304:9 320:6,9,11	antioxidants	248:15
282:20	affirmed	322:2,5,7,25	301:7 302:8 366:12	arthritis
	254:2	323:1 330:21	antioxidation	290:1
	afternoon	364:25	365:5	article

251:17,20,22 252:2,4 287:10 297:16 298:4 articles 337:16 345:24 359:21 articulate 264:23 asbestos 252:2,4 313:14,16 314:2,6,10,15,18 314:21,25 318:15 318:21 320:4,5,6 321:2,3,8,10,17 322:2,13,15,19 323:3,24 324:3,7 325:6,17 326:8,9 326:10,18 328:13 329:13 330:1,4 352:14,16,17,20 353:6 358:19,24 359:16,20 360:5 asbestos-related 325:20 asbestosis 330:11 asked 255:4,20 256:6 266:4,9 273:15 293:23 316:14,15 316:15 320:4 331:24 333:2 337:8 341:1 355:6 357:16 360:16 361:23,25 362:18 363:3 367:13 368:12 asking 254:22 255:3 264:2 268:25 269:1 271:18 272:12 273:11 277:12 301:8,13 304:15 308:7 310:6 343:25 349:18 350:8 351:23 aspirin	251:20 295:25 296:5,14 assessed 265:13 assessing 333:17 associated 291:23 296:10 304:23 305:18 320:23 321:8,17 322:3,7,12 323:4 335:9 346:10 366:14 association 264:13 266:22 269:24 273:19 274:14 276:7 277:9 278:3 297:21 306:2 323:7,16 328:11 329:10 332:8 334:22 335:1,5,7 335:10,13 336:1,2 339:23,25 340:4 340:20 360:4,6 361:18 associations 263:24 264:14,18 264:25 265:1 311:3 assume 310:21 assumes 287:22 assumption 314:16,24 attached 259:12 261:3 276:16 297:11 317:10 319:11 324:24 327:17 375:8 attempt 311:19 attorney 247:7,15,22 248:6 248:17 249:5,15	250:5,17 332:12 348:1 376:20 Austin 249:18 author 298:1 325:4 328:1 author's 325:12 authors 266:21 269:18,23 282:18 295:11 297:20 328:9 authorship 335:20 available 295:17 Avenue 249:16 average 322:18,20 avoid 293:9 345:3 aware 261:9 288:15 291:22 300:12,15 300:18,20,21 305:12 315:10,13 369:23 373:24 <hr/> B B 308:22,23 348:10 baby 318:19 322:20 330:22 366:1,4,5 back 282:12 319:4 324:8 331:8,16,19 340:3 347:19 354:13 369:5 371:24 backlash 363:20 balance 303:12 balloon 371:10 ballpark	312:19 340:20 371:3 barrier 364:9,16 barriers 288:2,13 based 262:24,24 263:1 266:18 270:8 278:10 280:10 281:15,21 292:12 300:21 313:8,9 314:4 318:14 349:19 350:6 351:14 362:8,8,14 362:14 baseline 301:4,4 basic 263:18 basically 358:11 363:10 basis 269:10 272:1 358:23 359:5 368:8 Bates 350:6,17 beach 247:17 286:1,3 Beasley 247:4 beautiful 356:18 beginning 246:9 352:15 373:20 begins 319:4 behalf 246:6 behavior 301:18 belief 274:3 314:17,20 believable 335:8	believe 260:11 261:8 272:17 274:2 279:19 281:5 285:16 291:3 293:6,8 297:6 298:24 300:8,16 300:25 314:1,14 317:18 320:14,19 321:3,9 322:13 324:12 328:21 332:2 333:20 346:24 354:22 356:12 357:7 372:14 benefit 344:23 benefits 333:18,24 BENJAMIN 248:16 benjamin.halper... 248:20 Berge 307:18,21,24 308:13 362:4 best 322:5 344:13 361:11 better 282:2 311:16 346:7 beyond 259:23 261:10 368:1 bi-directional 363:23 bias 273:18,21 274:21 274:24 275:2,4,8 275:14,18,25 280:16,21 281:1 281:22 biases 284:7,10,12 336:2 bigger 288:14 Bill
---	---	--	--	---

251:14 billed 355:3 Billings-Kang 250:4 251:8 347:4 347:11,21,25 349:6,8,18,23,25 350:3,8,12,16,19 350:24 351:16 354:4 biologic 266:22 267:2,3 285:12 365:19 biological 285:2,4,7 biology 337:6,21 biostatistician 254:14 biostatistics 334:3,12 bit 280:13 335:2 336:25 339:16 bladder 288:5,7 338:19 339:1 340:8,9,10 340:17 341:7 blood 330:16 board-certified 334:18 Bockus 249:4 251:9 298:18 299:4,4 331:1,10 331:13 332:6 333:14 336:12,19 337:10 338:11 339:3,9,20 340:23 340:25 343:4,14 344:9 345:4 346:1 346:24 347:12 369:7 370:14 372:8,19 body 305:8 340:1 book	335:19 bottom 295:10 309:14 Box 247:24 Bradford 323:23 334:21 335:3 BRCA 369:17 370:5,7,11 BRCA1 357:23 break 316:24 317:1,3 318:23 319:1 331:5 347:16 354:7,10 368:23 369:2 372:24 373:7,12 breast 307:9 Breslow 336:4 bunch 365:13 Buz'Zard 365:17 367:3 <hr/> C <hr/> C 248:5 308:22,23 CA125 366:24 Calcagnie 247:13 calculated 256:7,17 calculations 255:21 256:20 257:2,10 California 245:15 246:9,11 247:17 248:9 253:1,12 376:2,23 call 258:20 282:25 361:13	called 254:14,16 270:8 calling 372:24 Camargo 324:20 326:23 327:9,14,23,25 329:18 Canadian 353:17 cancer 251:17 252:2 266:23 269:3,21 269:25 270:15 271:9 275:9,11,21 276:8 283:6,17,25 285:2,4,8,9,14 288:22 289:9,14 289:20,23 290:3,9 290:18 293:9 294:4,5,17,22 295:15 296:4,5,15 296:18 297:23 303:11,16,19 304:1,3,3,4,16,19 305:13,18 306:23 307:9,10,14 313:4 314:2 320:23 321:9,17 322:3,8 322:12,14 323:3,8 323:8,10,11,13,14 323:14,17,19,25 324:4 325:7,18 326:1,19 327:3 328:3 332:8 333:1 336:22,23 337:3,5 337:18,21,25 338:3,20,20,20 339:1,10,17,24 340:1,8,9,17,19 341:1,7 345:14,20 346:2,10,17 355:19 357:18,21 357:24 358:2,5,20 359:1 360:5,20 361:1 364:21,24 365:11 366:25	370:1 cancerous 345:12 cancers 289:12,15 304:10 307:9 324:8 328:12 329:12,24 338:24 339:8 340:5,17 capacity 265:6 Carbon 364:4 carcinogen 302:1 carcinogenic 289:23 292:10 293:14 315:6 322:25 323:2 carcinogenicity 352:17 care 250:2 303:12 348:1 348:4 Carmen 259:9,10 CAROLINE 250:16 caroline.tinsley... 250:21 carriers 369:17 carryover 311:11 cartoons 372:11 case 256:7,13 262:20 281:11 313:15,18 313:23 315:1,3,24 316:4 321:22 332:7 333:3,6 341:16,19 354:18 355:4,11 362:12 370:12 372:18 377:6 case-control	275:1,15,19 276:3 276:6,25 277:1,4 277:6,7,17 279:11 279:12,15 280:20 280:21 336:4,7 342:8 362:7 cases 281:3,5,25 324:4 325:23 326:6,13 344:14,17 categories 320:20 catheterize 371:5,7 catheters 363:15 causal 283:5,16,24 338:18 360:4 causality 355:18 cause 252:2 290:13 291:2 292:12,15 294:17 303:10,11 305:5 314:10 322:14 325:6 339:7 340:10 358:1,20 359:1 364:21 365:11 caused 289:16 328:12 329:12 358:12 causes 279:9 289:11 290:8 290:22 291:1 305:4 314:2 357:18 358:5,5 364:24 365:22 366:1 causing 345:14 caveat 281:2 cell 274:9 300:7,8,16 301:3,5,9,11,14
---	--	---	--	--

301:17,18 302:5,9 302:14 303:7 358:14 365:6,6 366:12 367:10,24 cells 300:13,19 301:2,10 301:12,16,21 302:3 303:24,25 304:16,17,19,20 cellular 300:23 314:10 365:3,7 367:9,21 Center 247:23 central 263:14 certain 283:5,16,24 289:10 290:12 302:2 305:4 320:19 355:21 Certified 246:11 376:1 certify 376:3,18 cervical 274:11 287:18 288:17,22 339:17 339:24 341:1 371:4 cervix 371:14 cetera 338:20 cgarber@robins... 247:18 challenge 326:12 chance 279:8 304:3 360:18 361:9,13,16,17 change 267:25 315:1 changed 335:20 changes 302:2,7 365:2,7,19	366:19 367:7,8,10 368:3 chapter 298:9 336:9 359:15 characteristics 288:12 charge 261:19 check 260:12 268:13 checked 342:25 343:5 chemical 313:24 chemicals 320:17,21 321:4 330:15,22 338:25 340:11,13 child 372:11 chlamydia 306:24 307:3 choose 319:25 331:19 334:9 chose 268:7 Chris 319:8 chronic 289:11,18,19 290:1 291:4,13,23 292:15 294:16,21 295:13 364:23 cigarette 340:11,19 circumstances 357:25 citations 262:23 cite 263:10,22 264:11 276:13 287:4,9 294:8,13 302:17 302:24 304:5 345:16,23,24 citing	263:19 City 375:11 clarify 255:21 265:18 303:4 clear 308:11 368:12 373:16,21 clearer 339:16 clearest 335:22 clearly 267:25 278:19 367:1 clinical 313:9 333:16 363:13 366:23 close 268:21 272:19 356:9 closely 285:11 closer 287:19 311:6 cohort 262:20 263:3,7,13 263:14,23 264:4 264:12,24,24 265:5,8,10,15,16 265:19,23 266:2,8 266:16 267:7,8,21 268:9 269:10,11 271:1 274:17 275:15,21 282:8 321:22 342:8 343:9,17 360:6 cohorts 266:6 coin 360:24 colleagues 330:25 collected 267:14,18 collection	339:18 colon 338:20 combination 295:12 combine 284:4 combining 273:5,17 274:6 284:13 come 302:9 359:19 comes 368:9 371:12 comfortable 344:13 355:20 comment 369:8 Commerce 247:8 commercial 352:20 common 307:4 312:22,24 323:13,14 340:18 368:19 communicate 258:19,22 communications 258:15 community 362:8,14 comparable 281:25 compare 301:3 compared 330:18 comparing 281:9,16,20,24 301:9 326:7 comparison 301:14,19 311:10 329:14 compelled 373:23 compelling	323:17 360:4 367:5 367:12 competitive 372:12 complete 356:17 completed 312:17 completely 359:25 completion 376:14 complicated 278:22 complications 363:18 components 339:14 computer 332:18 concentration 287:17,23 288:4,12 302:25 330:21 concentrations 287:25 302:18 concept 272:15 335:3 concepts 263:21 concern 312:7 344:21 345:3 352:16 concerns 329:13 conclude 267:4 290:7 292:15 295:11 314:3 concluded 254:11 266:8 269:18,23 270:17 295:19 328:9,22 329:2,9 362:16 374:6 concludes 298:1,3 concluding 283:9
---	--	---	---	--

conclusion 262:6 312:18 327:25 355:17 365:25 373:19	310:3 334:25	contribute 273:10	306:15 311:8	court 245:2 253:15,22
conclusions 297:23 325:11,12 326:4	considerable 338:12	contributes 300:22	320:23 323:21,25 330:18,22 332:10 333:1,11,18,24 334:23 338:14,24 339:1,11 340:1 341:3,22 343:11 346:5,12 348:10 352:24 369:10,13 369:20,21 375:9 376:11,24	256:23 299:2,15 299:17,18 304:18 308:5 319:24 366:10,15,17 367:19 373:15
concurrently 358:17	considered 312:16 324:4	contributing 358:1	control 262:20 281:8 301:16 321:23 367:7	covariants 308:15
condition 290:2 291:24 373:7	consistency 335:3 366:21	controlled 306:18 307:12	corrected 375:9	covariates 307:25 308:17,17 308:19
conditions 289:9,19	consult 373:11	controls 281:3,5 282:1,2 301:1 311:12,13 311:16,17 344:17	corrections 375:7	cover 259:7
conduct 318:2 333:16	consultant 354:19	conversation 254:24 255:17 258:17 298:23	correctly 295:16 352:22	CPFA 348:5
confer 374:1,2	consulting 373:12	copies 259:3	correlation 372:2	create 371:9
confidence 256:8 277:24 278:4 278:14 279:15,21 279:22,25 280:2 280:14 282:19,24 312:20 360:17 361:15	consumer 353:16	copy 261:12 262:3 317:21 319:13	correspond 302:10	criteria 311:22,24 334:21 334:24 356:20 357:8
confirm 297:15 355:15	contain 290:13 314:2,6,14 314:17,21	copying 262:2	correspondence 332:17	criticize 273:4
confounders 306:13	contained 256:14 257:10 311:25 320:5 322:6 375:9	cornstarch 290:22,25 291:1,3 291:7,12,15,23 292:3,10 293:7,13 293:15,18	cosmetic 302:20 352:19	criticizing 273:9
confounding 284:7,10,14,15 305:22 306:1,6,9 306:18	container 322:22	Corporate 247:16	cost 263:12	cross 360:18
confused 330:3,3	containing 313:15,19,23	correct 256:11 258:10 266:13,14,23 270:12,19,20,22 271:2,10 274:21 274:24 275:6,22 276:8 277:9 279:18 282:9 283:7 284:23 285:5 286:10,21 287:6,7 288:24 289:9 290:3,4 293:22 294:9,17 296:6 298:5	Council 250:2 348:2,4	crude 308:2
confuses 306:2	contains 315:6		counsel 253:19 254:5 259:2 260:17 261:15 262:15 298:7 316:5 331:9 347:20 351:4 354:14,23,23 355:3 360:12,23 369:6 372:21,24 373:4,9,17,24	CSR 245:24 376:1
confusion 299:8	contamination 314:24		counseling 293:10	Cummings 335:21
congress 249:16 333:15	content 333:7 352:20		counted 344:12	curious 332:24
connected 363:21	context 301:10,12 311:2		couple 309:18 324:15 368:24 371:13 372:20	currently 265:20
connections 371:1	continued 248:1 249:1 250:1 252:1			CV 254:23 255:3
consider 271:14 278:15 290:21 291:7	contracted 318:1			CYNTHIA 247:14
	contrast 371:15			<hr/> D <hr/>
				D 297:2,2 308:23,23
				D.C

250:7 daily 272:20 damage 302:4 303:25 305:9 314:11 Daniel 247:21 data 267:14,17,24,25 269:19 282:10,13 282:20 295:18 302:17,24 303:5 304:13 314:3,13 323:16 326:17 335:4 338:9 339:15,18 341:23 343:8,10,16 344:18,24 359:19 date 253:8 dated 376:24 day 331:24 336:4 375:10 376:24 377:23 days 373:6 dead 364:2,3 deal 281:1 353:20 death 365:6 decades 269:18 decided 353:5 decision 341:21,22 342:2,14 decision-making 342:7 declare 375:5 376:22 declared 376:6	Defendant 248:3,14 249:2,12 250:2 348:1 Defendants 250:14 254:5 331:9 347:20 369:6 372:21 defense 315:18,20,24 316:4 316:6 359:25 373:5 defer 297:3 define 281:14 289:6 defined 263:6 264:6 272:13 272:16 300:11 definitely 283:3 344:8 definition 268:4 272:3,8 274:3 312:8 definitive 277:23 322:10 degree 371:18,20 demonstrate 272:10 278:11 286:8,12 demonstrates 362:21 demonstration 286:13,16 dependent 313:15,18,23 depends 281:2,18 deponent 253:17 deposition 245:13 246:5 253:10 254:10 255:18 260:3,17 262:6 300:17 319:5 327:14 348:3 373:6,19,20	373:24 374:3 376:14 depth 265:6 describe 314:9 357:19 described 338:23 353:24 372:2 describing 281:22 328:24 329:8 description 251:11 344:5,8 design 263:21 265:11,19 265:22,23 266:4 designed 369:15 designs 265:21 266:3 335:6 despite 265:14 328:10 329:9 destination 287:1 detail 265:10,24 268:6 344:6,8 356:14 357:1 details 254:15 detect 263:24 264:12,13 264:17,25 detected 318:15 detecting 273:18 determination 292:12 determine 287:25 337:2 343:15 369:16 determined 341:21 determining	282:16 341:9 342:19 develop 303:19 304:1,1 development 295:14 305:13 diagnosis 325:24 diaphragm 274:12 diaphragms 271:8 difference 280:9 308:2 309:3 309:21 310:2,4,10 310:14,23,23 311:1,4 343:16 differences 310:6 different 256:4 272:2,22 273:22,23 274:16 280:1,13,15 288:7 288:8 289:12 301:12,17 302:1 308:14 310:15 321:7,21 324:21 329:3 330:21 338:24 344:7,8 350:21 357:20 361:12 366:6 367:2 369:10 371:2 difficulties 325:24 direct 367:23 direction 296:21 376:10 directions 363:24,25 364:2 directly 285:17 371:8 disadvantages 262:20 disagree 271:20	disclosed 360:1 discount 271:22 discovered 345:12 discuss 265:9 278:8 295:20 305:20 313:1 337:17 372:23 discussed 277:11 305:14 306:22 311:15 discussion 257:18,22 258:13 272:5 295:11 297:14,19 328:6 328:17 329:19 discussions 373:4 disease 275:6 305:16,17 306:3 diseases 325:20 358:17 distance 287:24 distinguishing 325:25 distort 275:5,8 306:6 distribution 321:7 District 245:2,3 253:15,15 divided 321:25 division 300:14 DNA 365:7 doctor 293:10 298:25 331:11 369:8 document 332:18 348:17,20 348:23 349:20
---	--	---	--	---

350:6,21,23,25 351:3,6,9,11,18 351:20,20,25 352:4,8 353:8 documentation 357:3 documented 286:18 335:6 360:3 documents 257:3,8,11 349:10 350:9 354:2 365:16 doing 260:14 263:12 301:15 370:17 dollars 261:20 dose 304:8 367:6 double 358:10 Dr 254:9,16,19 255:1 255:11,17 256:6 257:18,22 258:13 258:16,19 261:7 264:10 295:18 298:13 299:11,22 300:1,4,12,18 301:21 315:8,21 319:5,7 342:3,6 342:13,18,25 343:5 347:22 354:16 360:1,10 365:21,25 368:12 372:23,24 373:6 373:14,17 374:2 Drive 247:16,23 duly 254:2 duration 271:11,18 272:2 Dykema 249:3 <hr/> E <hr/>	E 249:6 297:2 308:23 e-mail 254:22 258:20 e-mails 254:25 255:1 261:6 332:21 earlier 268:6 305:14 311:15 331:20 earliest 343:9 early 354:21 easiest 322:14 easily 266:1 357:14 Edelman 328:7 329:8,19,21 editor 261:13 319:13 edits 320:1 effect 368:3 369:9,16,24 either 330:20 358:8 361:21 elevated 346:9 Ellis 248:4 250:15 emphasizes 308:3 employee 376:20 encountered 302:19 ended 355:12 endometrial 297:22 endometrium 288:8 engagement 259:8,8	enhance 358:18 enhanced 338:9 358:13 enhancing 358:11 enormous 364:25 365:15 entirely 373:10 entirety 278:6 335:12 entitled 294:20 environment 304:22 environmental 302:1 enzymes 302:3 Epi 263:1 epidemiologic 314:4,12 315:4 epidemiological 306:7 epidemiologist 285:9 epidemiologists 263:10 336:16 epidemiology 334:2,12 335:14,17 335:19,22 353:14 epithelial 269:3,21 294:22 323:10 equal 296:8 equated 271:19 equation 343:21 equivalent 271:20 339:10 360:24 363:10 equivocal 297:21	ERRATA 377:1 errors 256:8 282:23 343:1 343:6 essentially 355:13 360:18 established 283:7,18 284:1 352:19 353:21 estimate 260:13 279:7,7 312:16 323:6,10 335:9 361:11,11 estimates 256:15,18 280:12 322:22 355:13 361:3,5 estimating 257:6 308:4,5 et 338:20 ethical 364:13 etiology 333:1 337:15,17 339:1 evaluating 333:23 evaluation 275:5 evening 258:17 evidence 266:22 267:2 286:2 286:6 289:1 290:15 294:14 314:4 315:4 318:21 330:16 362:24 363:6,12 364:22 ex 315:18 exact 302:9 308:18 exactly 255:24 256:3,12	278:18 292:19 293:1 339:6 355:19 examination 251:2 254:5 331:9 347:20 354:14 369:6 372:21 376:8 examine 284:22 examined 254:4 325:21 example 275:8 291:16 302:2 310:17 338:17,25 340:8 examples 339:7,15 340:9 exams 291:18 exception 343:9 exclude 279:8 341:10 342:9 344:21 excluded 343:8,17 exclusion 356:19 excuse 255:9 262:1 264:16 298:19 348:25 EXECUTED 375:10 exhibit 251:12,14,17,20,22 251:24 252:2,4 257:23 259:6,6,11 260:3,25 261:2,5 262:9,10 276:14 276:15 297:9,10 299:7 317:8,8,9 319:9,10 324:18 324:23 325:1,3 327:15,16 348:8 348:10 352:11 360:11
---	---	---	--	--

EXHIBITS	252:2,4 267:21	factors	270:18 293:16	354:17 363:13
252:1	268:2,7 273:12	288:1 306:18,21	fibers	364:21 365:24
exists	274:8,12,12,13	307:11 327:3	322:1 352:20	372:25
279:1 326:18	275:6,10 287:16	328:3 329:16	fibrosis	five-page
expand	287:20 290:8,16	357:20,24 358:5	287:10 293:21	259:6
266:5	302:18,25 305:3	358:12,16 369:10	fibrous	flaws
expect	306:3 312:5,8,10	369:25 370:10	314:7,15,23 358:25	311:19
274:7,11 287:23	312:12,21,21,22	failed	359:20	Flom
296:4,8 319:18	312:23 315:5	376:16	Figure	248:15
329:23 361:2	322:2 325:6,18	failure	256:15 276:22	Floor
367:11	326:18 328:13	329:15	277:5,19 278:11	248:8 377:3
expected	329:12 359:16	fair	279:13 360:14	Flower
288:14 350:6	360:5 361:1	289:2 332:9	361:3	248:7
experience	365:10 370:11	fall	figures	fluid
313:10	exposures	287:24	255:22,24 256:15	363:15,17,19
experiment	324:7 359:22 360:7	fallopian	266:13	370:18 371:19
301:1,14 367:6,14	express	287:6	file	fluoroscopy
367:15,17,20	302:23	false	299:1,6	371:16
expert	expressed	364:10	final	FLW
288:10 289:1,6,6,6	373:7	familiar	342:13 344:24	245:9
298:13 299:23	expression	280:16 294:19	financially	focus
315:11 316:4,6	301:2,6 302:2,4,8	295:22 305:21,25	376:18	263:5,14 264:5
322:17 348:10	365:6,8 367:4	336:3,12 369:23	find	265:24 362:1
349:9 352:10	extended	family	263:18 270:13	focused
354:19 360:1	373:7	321:3	271:3,6 281:4	266:12 323:12
373:11,12	extensive	far	318:21 329:23	333:17
expertise	272:5 363:6	259:20 287:17	332:22 335:16	focuses
285:5,17 333:4,8	external	371:14	336:6 338:2 354:2	333:23
334:17	287:12 288:21	fashion	354:3	focusing
experts	externally	371:11	finding	273:16 333:17
315:20	293:20	favor	362:2	follow-up
explain		273:18	fine	267:7,11
275:18 326:5	F	FDA	349:25	followed
explained	F	316:18,21 317:14	finish	269:12
256:12 257:8	250:6 308:24	353:17	317:5	following
263:18 272:17	facing	February	finished	269:16 298:23
explaining	366:17	245:16 246:10	258:23 305:1	follows
356:19,24	fact	253:2,8	firm	254:4
explicit	256:7 257:6 275:13	feeling	247:4 297:23	foregoing
359:18	275:18 281:24	331:14	first	375:6 376:4,11,23
exploration	287:25 333:14	feels	254:2 255:17 259:7	forest
320:25	338:11 357:11	371:12	267:21 283:13	361:2
exposed	359:21 361:7,14	felt	294:11 295:10	form
292:3 323:1 326:8	361:20 363:6	332:3 344:15	297:14,19 325:4	256:16 266:24
326:9,10 329:25	369:8,23	female	325:13 332:11	267:16 270:5
330:4	factor	332:12 370:15	334:16,21,24	271:17 272:11
exposure	287:24 288:11	fewer	337:8 352:13,15	273:2 274:25

277:10 279:3 280:23 283:2,8 284:11 285:6,15 286:11,22 287:8 287:21 288:23 289:3 290:14,24 291:14,25 292:17 294:10 296:7 300:24 301:24 303:3 304:7 307:2 310:5,12 313:20 314:19 315:2,23 316:3,6,13 320:13 320:24 321:11 322:4 323:5 324:5 326:3 330:2 332:5 333:12,25 336:8 336:18 337:7 338:5 339:2,12 340:2 341:11 343:2,13 344:4,19 345:18 348:25 349:1,11,22 350:14 351:13 356:1,6 357:6 358:3,21 359:3 366:2 368:7,17 370:2 372:5 forms 311:25 formulate 349:20 350:12 formulating 349:9 351:11,18 forth 266:12 311:22 376:5 forwarded 261:14 FOSTER 249:14 found 275:19 281:3 286:25 320:22 foundation 358:21 359:3 four	278:20 fragrance 313:24 320:17,21 330:15,21 Francisco 245:15 246:8 253:1 253:11 free 314:10 frequency 268:4 271:19,24 272:18 345:11 frequent 271:15 272:1 Friday 245:16 front 262:8,12 266:25 327:9,19 349:15 350:17 full 331:16,20 376:11 fully 356:20 further 254:10 269:5 328:1 330:24 339:16 345:7,13 368:21 373:10 376:18 <hr/> G <hr/> gain 306:25 307:7,16 gaps 311:19 GARBER 247:14 gastric 338:20 Gates 267:8 268:9,11,25 268:25 269:1,11 269:18,23 271:23 282:8 gene 300:19 302:8 304:15	general 259:8 262:19,24 263:20 266:2,11 275:1 280:25 281:4 308:2,13 346:14 generally 257:19 273:6 307:12 316:7 321:12,14 350:9 368:5,14 370:12 generated 259:20 315:16 generic 304:21 genes 302:5 367:4 genetic 304:20 genital 287:12 288:16,21 330:17 363:1 Gertig 265:16 266:8,16,18 266:21 267:8,11 268:25 269:10 getting 276:11 304:23 330:4 give 272:5 321:15 327:11 given 284:25 306:19 333:21 334:1 339:7,15 376:13 gloves 291:17 364:6 go 260:12 262:14 265:6 282:12 284:12 294:13 295:7 317:25 324:8 331:1 332:20 340:3 347:1,10,12 348:16 352:10	363:25 365:19 368:17 goes 280:4 363:16,23 366:25 370:19 Goff 245:23 246:11 253:23 376:1 going 259:5 260:11 262:2 297:3 317:2 333:20 338:12 340:3,23 342:20 342:21 345:9 347:15 349:16 351:20 364:2 373:2 Goldman 247:20 Golkow 253:7 377:2 Gonzalez 271:22 273:4,5 good 254:7,8 262:5 265:23 292:23 316:25 317:3,4 331:11,15 347:22 347:24 Gordon 249:13 gram 322:20,20 granulomas 287:10 293:21 graphics 356:18 Graves 250:24 253:6 great 276:24 281:1 353:20 greater 275:14 287:17 304:2,3 305:21 312:19 330:8,11 345:11 361:21,22	365:8 372:16 group 278:5 301:16,19 362:9 grouped 321:5 guess 273:20 310:8 334:8 372:17 guidelines 352:18 353:2,4,24 353:25 gynecology 334:6,13,19 <hr/> H <hr/> half 331:24 353:13 361:3,4,17,18 halfway 352:14 Hall 254:16,19 255:1,11 255:17 257:18,22 258:13,16,19 261:1,7 342:3,6 342:13,18,25 343:5 372:24 HALPERIN 248:16 Hamilton 365:17 hand 259:5 268:15 317:7 324:13 353:18 handed 319:8 happen 348:20 happens 300:15 368:9 happy 332:22 hard 266:5 harm 293:17
---	---	---	--	---

Harper 298:10	historical 339:18	IARC 321:19 324:6 358:22 359:16	inappropriate 329:14 373:11	362:9 364:11
head 371:22	history 306:24,25	idea 353:4 364:8 370:10	incidence 296:15 346:2	individually 278:9
health 266:18 267:15,18 268:20 269:6,9 270:8 334:14 343:10	holly 335:20	identical 356:8	include 265:15 266:10 268:9 270:3 282:7 337:21 341:10,23 342:9 343:23 344:10	inducing 304:4
healthy 281:16,20	hope 331:12	identification 259:11 261:2 276:15 297:10 317:9 319:10 324:23 327:16	included 294:24 296:25 307:24 308:14,22 312:11 324:20 342:13,21 343:16	industry 352:19 353:5,21
held 253:10	hospital 281:20 311:13 362:8,13	identified 277:5 321:6 339:21 351:5 367:9	including 321:22 344:16	infection 306:25 307:3,4 363:23
Heller 345:19,22	hospital-based 276:2,6,25 277:4,6 277:7,12,15 279:12,15,23 280:5,19,25 281:6 281:8 282:1 311:17 362:1,5,10	identify 253:19 311:19 333:22 334:2 335:16 338:21,25	inclusion 311:23 356:19 357:8	infer 328:12 329:11
help 319:22,24 368:2	hospitalized 281:9,9	II 245:17 246:6 251:4 253:18 254:1 319:6 375:15 377:21	incomplete 266:23	inflammation 288:16 289:1,5,11 289:13,16,18 290:2,13,23 291:1 291:2,5,12,16 292:12,16 293:20 294:4,16,21 295:13 296:1,3,9 305:14 336:22 337:12,14 338:3 338:19 339:8 340:10 364:20,21 364:23,24 365:2 365:20,23 366:1,7 366:22 367:11
helpful 355:15	Houghton 270:3,7,13 271:1 271:11,22	ill 281:16	inconsistency 279:13,20	inflammatory 289:9,19 291:4,19 291:24 305:16,17 338:22 365:7,18
Henderson 345:20,20	hour 261:18,21	imagine 358:6	increase 273:12 290:2 293:9 303:23 340:7,7 365:4,5	influence 251:20 296:9
hereto 375:8	hours 259:24 260:8,13,23 331:19	imaging 333:18,24	increased 360:20 362:3	influenced 275:25
hesitant 277:23	HPV 339:17,24 341:1	Imerys 249:2,12 331:13	increases 305:15	information 265:13 266:9,10 300:3 312:15 328:11 329:11 345:17 354:24
hesitation 273:9	human 286:7	immortalized 300:6	independent 317:16	infrequently 370:25
heterogeneity 284:18	humans 367:14,16,18,21	impact 288:14 358:15	INDEX 251:1	inhalation 358:23 359:10,13 359:17,23
high 282:16	Huncharek 308:25 312:4	importance 308:3	indicate 303:19 305:12	inhaled 358:19 359:1
higher 304:16 329:23 330:17	hundred 261:20 268:10 269:16,17	important 263:7 282:17,20 312:3,9,24 332:22	indicated 298:7	
highlight 334:16	hypothetically 357:22	impossible 306:17	indistinguishable 280:2	
highlights 334:10	hysterectomy 346:3,11,17	impressed 366:21	individual 277:12,20 278:21 279:4,14 282:13 311:21 340:5 344:25 361:14	
highly 361:9,9,9 368:6	hysterosonogram 370:21	inability 327:2 328:2		
Hill 323:23 334:21 335:3				
hips 371:22				
hired 332:7				
	I			

initial 287:19 358:10	360:17	jbillingskang@se... 250:8	299:22 303:4,14	large 263:13 268:13
initialed 375:7	intervention 301:15	jbockus@dykem... 249:9	303:16,16 307:9	308:1 322:24
initiation 294:3 336:21 337:3	interview 334:3,9	JD 247:6	310:9 312:22	largely 360:5
Initiative 270:9	interviews 333:21 334:1	JENNIFER 249:14	314:5 315:16,18	Law 247:4,7,15,22
initiator 338:3	introduce 334:5	Jersey 245:3 247:25	315:20,25 317:18	248:6,17 249:5,15
inject 363:19 371:10,17	introduced 331:11	253:16	320:25 321:7,19	250:5,17
injecting 363:15 371:14	introduction 294:12	jfoster@gordonr... 249:19	321:24 322:13,24	laws 376:23
injury 331:22	invasive 323:14	Johnson 245:6,6 246:7,7	327:24 329:20	lawyers 332:17
ink 375:7	invoice 251:12,14,24	248:3,3,14,14	330:9,14,19	lead 289:9,13,19 302:15
instance 303:15	259:15 260:19,20	253:12,13 366:3,5	335:23 336:9	365:19
Institute 334:14	261:14,16 319:8	Johnson's 366:1	339:7 340:4,6,16	leading 291:16 293:20
institution 368:10	319:12	jot 255:19	340:22 341:4,7	294:4 336:22
instruct 373:3	invoices 259:4,20 260:3,7	journal 282:21	344:14 345:16	leads 290:18 303:15
insufficient 328:11 329:11	261:1,7,9,12	July 332:18	348:13,20 349:3	305:16,18 365:8
intended 260:21	319:15	June 259:14 332:20	351:23 352:11	leave 331:20
intent 356:11	involved 270:11 285:11	354:22	354:21 357:13	led 291:18 333:8 357:9
interest 307:8	305:13 306:22		359:15 363:23	Lee 334:14
interested 376:19	342:14,16,19,20		364:4,11,14	left 320:3
interesting 273:15	involving 268:20	K	365:21 367:25,25	legitimacy 336:2
interpret 280:7	issue 325:21 338:2,10	keep 300:14 371:9	369:22 370:4,13	legitimately 335:6
interval 277:24 278:4,14	373:15	kind 281:22 289:12	372:1,6,8,13	LEIGH 247:5
279:22 280:2	items 351:24	310:18 321:4	knowledge 262:25 275:24	leigh.odell@beas... 247:10
361:15	J	365:2 367:13	320:22 321:24	length 305:21
intervals 256:8 279:16,22,25	J 245:23 246:10	371:9	322:5 330:20	let's 276:14 318:22
280:14 282:19,24	J&J 360:12	kinds 321:7	knowledgeable 285:7	368:23 371:10
	James 250:4 347:6,25	knew 333:6	known 263:12 306:17	letter 251:12 259:7,9
	Jane 249:4 256:6 261:1	know 266:9 286:2,5,17	329:16 352:17	level 292:20 302:25
	299:4 331:12	286:23 288:19		
		289:8 290:6,15,19		
		292:9,20 293:3,3		
		293:25 298:13,15		

344:23 365:3,8 levels 301:6 303:13 330:16 Levin 246:7 LHG 245:9 Liability 245:7 253:14 Liberty 377:3 ligation 346:3,12,20 limit 305:9 352:20 limitation 263:7 264:5 265:14 265:15 307:24 328:1 limited 323:12 325:21 line 274:9 301:9,12,14 301:17 367:10 377:7 lines 300:7,8,16 309:18 link 283:5,17,25 288:20 linking 338:19,19 339:10 list 276:23 297:1,8 338:24 348:9,9,13 351:1,5,9,15 365:12 listed 350:25 lists 350:21 literally 363:20 literature 263:22 264:11 289:5,10 290:17 291:15,17,22	292:9 293:19 296:12,24 306:24 323:24 330:19 332:25 337:1,6,8 337:10,14,21 339:10,13 355:25 356:4 365:1 litigation 245:8 253:7,14 259:21 298:14 299:24 315:10,14 315:21 316:7 354:25 377:2,6 little 278:22 280:12 331:20 335:2 339:15 355:20 361:22 living 301:10,12,18 364:2 LLC 250:14,14 LLP 246:7 248:4,15 249:13 250:3,15 locate 332:15 long 255:10 longer 267:11 339:18 Longo 315:8 322:18 Longo's 315:21 look 261:4 269:5 276:10 276:21 277:19 278:8 282:21 283:13 302:2 312:25 325:11 327:23 332:21 345:23 346:9 362:4,6 370:3,22 looked 276:2 278:7 279:10 287:4 300:6 312:5	314:13 315:7 323:20 326:23 332:7 335:24 341:20 354:1 366:3,6,8,12,13 369:24 370:5 looking 266:15 268:19,24 269:4 274:1 309:13,18 312:20 325:15 334:4 336:10 345:5 351:3 371:1,15 looks 258:1 259:8 323:18 Los 248:9 loss 300:22 lost 264:1 328:16 lot 288:1 289:4,10,12 334:1 351:21 353:3,20 363:14 lots 358:12 Louis 250:20 love 317:1,3 lower 296:5 371:22 lungs 330:12 <hr/> M <hr/> M 247:6 250:16 M.D 245:14 246:6 251:3 254:1 375:4,14 377:21 magnitude 310:22 major 295:14 325:22	male 332:12 manuscript 256:1 298:22 299:6 MARGARET 247:6 mark 262:5 276:14 295:5 297:9 324:18 327:14 marked 257:23 259:5,11 261:2 262:9 276:15 297:10 299:1,7 317:9 319:9,10 324:23 327:16 360:11 markers 366:21,23 Market 377:3 Marketing 245:7 253:13 Mary 245:23 246:10 253:23 376:1 Maryland 318:2 material 364:6,6 materials 260:16 294:24 298:8 353:23 math 260:12 341:13 mathematical 343:5 matter 253:12 258:24 260:14 274:9 286:8,25 331:13 matters 281:6 MD 247:6 MDL 245:8 259:21	Meagher 248:15 mean 256:6,18 273:14 278:25 284:13 286:12 298:22,24 298:25 302:6 305:5 307:23 308:8,11 310:16 326:11 337:14 348:4 353:1 356:15 361:15,17 370:13 meaning 265:10 271:24 308:17 meaningful 254:24 312:10 335:8,13 meaningfully 256:3 335:5 means 279:5 310:15 326:6 371:17 meant 308:7 367:22 370:12 measure 265:4 272:2 296:9 312:10 343:19 measures 366:6 mechanism 267:2,4 285:8 294:2 296:3 305:8 336:21 337:3,12 337:17 mechanisms 285:2,4 302:11 365:19 mechanistically 368:3 Media 319:4 medical 333:18,24 medicines
--	--	---	--	--

295:25 meeting 260:17 meetings 354:22 Melissa 294:20 member 304:10 334:13 memory 349:19 men 326:7,9 menstruation 363:24,25 mentioned 259:22 303:21 307:5 356:10 359:13 366:7 Merritt 294:20 295:7,18 mesothelioma 326:1 329:25 330:5 330:8 message 296:24 met 332:19 354:22 meta 329:3 Meta-analyses 284:3 meta-analysis 254:15 255:20 274:3 284:8,17,21 323:9,18 328:25 355:7 356:3,7,11 metals 313:19 320:12,15 330:17 method 318:20 341:16,18 methodology 284:22 301:20 341:9,14 357:2 mic 347:13 366:18	MICHAEL 248:5 michael.zellers@... 248:10 microphone 331:2 middle 263:2 264:3 338:17 345:6 migrate 287:5 362:25 migrates 287:15 migrating 362:22 migration 285:23,24 286:8 362:19 Mike 262:1 264:1 298:19 332:19 millions 322:23 mind 317:2 370:4 mine 269:2 344:21 355:19 mineral 321:25 minimum 290:19 minor 311:4 minute 331:2 minutes 255:12 317:2 368:24 374:4 misclassification 329:14 Missouri 250:20 misspoke 346:23 mixed 296:13	mobile 364:3 model 367:10 368:2,5,13 368:19 modified 300:13 moment 364:20 momentarily 262:4 Montgomery 246:8 247:9 253:11 month 271:25 months 371:13 morning 254:7,8,12 258:24 331:11 347:22 373:20 374:3 mortality 297:22 motion 374:5 move 319:21 326:14 331:2 347:12 364:5,6 373:13 moved 286:24 movement 286:19 MPAff 247:6 mucosa 288:2,6,8 mucosal 288:13 mucous 288:2 multiple 344:12,17,24 357:18 358:4,16 mutation 357:23 369:17 mutations	304:1,16,20,21,23 366:13 <hr/> N <hr/> N 366:16 name 253:6 332:15 347:25 named 325:4 napkins 271:8 narrow 274:3 363:3 narrowly 263:6 264:6 national 269:9 nearly 268:6 356:8 necessarily 274:11 335:8 344:7 necessary 290:16 need 268:13 275:24 316:24 324:13 327:6 347:12 needing 370:24 needs 344:6 negative 292:5 Ness 365:14 never 307:17 new 245:3 247:25 248:19,19 253:16 306:21 307:6 333:10 359:10,25 Newport 247:17 news	353:15 nice 367:15 night 373:18 nine 270:18 non 304:19 nonaspirin 251:20 noncancer 304:17,18,20 nonoccupational 327:2 328:2 nonresponsive 298:18 326:15 340:24 nonsteroidal 295:22 nonusers 330:18 normal 301:21 303:7 345:13 Notary 377:25 noted 374:9 375:7 notes 255:13,16,20 257:17,21,23 258:1,12 376:12 November 259:15 260:2 NSAID 251:20 297:21 NSAIDS 294:21 295:22 296:4,10,14 number 251:11 262:19 276:24 292:6 304:15 310:18,19 310:20 321:21 322:24 324:4,8,9 325:23 326:6,7,13
--	---	--	--	--

335:11 340:22 343:22 350:7,17 355:6 357:17,20 360:16 numbers 255:22,24 256:7,10 256:12,14,17 257:13 268:14 304:10 341:8 343:15 365:15 Nurses' 266:18 267:15,18 268:20 269:6 343:10 NW 250:6	317:21,24 320:13 320:24 321:11 322:4 323:5 324:5 326:3 327:5,21 330:2 332:5 333:12,25 336:8 336:18 337:7 338:5 339:2,12 340:2 343:2,13 344:4,19 345:18 347:1,6,9 348:25 349:4,7,11,13,15 349:21,24 350:2,5 350:11,14,17,20 351:13 354:6,15 356:2,10 357:16 358:19,25 359:5 359:13 360:9 368:4,11,21 370:2 372:5 373:2,16	349:1,11,22 350:14 351:13 359:24 370:2 372:5 objected 299:2 objection 293:23 345:18 350:11 356:1 357:6 358:3,21 359:3 366:2 368:7 368:16 objections 359:7 376:8 observational 306:10,14 obstetrics 334:6,13,18 Occasionally 363:18 occupational 252:4 324:7 326:18 328:13 329:12 359:16 360:7 occur 358:17 365:10 occurred 303:1 odd 279:23 280:10 odds 279:20 280:3 282:18,24 309:24 310:3,10,14,17,23 310:24 311:5,6,7 361:25 Oh 317:22 341:14 347:6 okay 253:22 258:6 264:21 268:19 271:2 277:17 283:21 295:2 297:5,18 298:4 299:16 305:3 308:10 309:15	325:3 328:17 330:24 332:1,6,14 333:9,14 341:18 342:6,24 348:6 351:8,16 352:9 354:4 355:6 357:16 360:9 361:23 362:18 364:25 368:20 370:14 older 332:21 omitted 283:23 once 271:25,25 ones 255:25 256:5 273:16 312:12 356:8 ongoing 294:17 oophorectomy 346:18,22 open 363:10 opinion 285:18 292:11 321:1 333:22 349:9,20 350:13 351:11,14,18 359:12,25 362:25 364:23 opinions 284:25 285:1 313:14,18,22 315:1 321:16 355:10 359:9,10 oppose 374:5 opposed 267:21 268:4 274:18 275:15 353:7 order 301:4 333:11 organizations	353:16 organs 301:22 outpatient 281:21 outside 286:9,20 ovarian 251:17 252:2 266:23 269:3,21 269:25 270:15 271:9 275:9,11,21 276:8 283:6,17,25 285:13 290:3,9 294:3,17,22 295:14 296:3,5,15 296:18 297:22 304:3 305:13,18 306:23 307:10,13 313:4 314:2 320:23 321:9,17 322:3,12 323:3,7 323:8,10,11,17,24 324:3 325:6,18 326:1,19 327:3 328:3,12 329:11 332:8 333:1 336:22 337:3,18 337:25 338:3 339:10 340:1 345:12,13 346:2 346:10,17 355:18 357:18,21,24 358:20 359:1 360:5,20 361:1 364:21,24 365:11 366:25 370:1 ovaries 285:20 286:9,19,21 287:6,16 363:21 370:19 372:10,15 ovary 288:8 362:23 363:2 363:8,8,11 overall 323:18 overlap
---	---	---	---	--

277:13,13,14,16 278:4 279:16 280:6,14 344:11 344:22 345:1 361:15 366:23 overlapping 278:15 overlaps 279:22 335:2 oxidants 301:6 302:7 366:11 oxidation 365:4 oxidative 303:10,13,13,15,18 304:2,22 305:4,5 305:9,12,15,16 358:13,14 366:8 oxygen 303:7	336:20 345:5,6 348:12 351:5 352:11 360:2,13 377:7 pages 257:24 paid 298:13 299:23 315:10 355:2 paper 276:12,22 284:14 286:4 294:19 295:8 297:1,9 298:12 307:16 324:17 325:8 326:23 327:9 356:18,23 360:11 360:14 361:24 362:4 papers 284:12 292:1 296:19,25 353:13 353:14 370:3,5 paragraph 263:3 264:1,3 283:14 294:11 295:11 297:14 318:1,8 327:25 328:6,19 338:16 345:7,10,24 352:14,15 paragraphs 294:14 part 255:6 270:23 303:7 356:22 359:11 363:9 participate 342:6 particles 286:4 322:19,23 345:8,12,14 363:7 364:4 particular 263:25 289:11 308:4,6 313:24 335:9,11,25	341:16,19,23 353:11,12 particulate 286:8,20,25 parties 373:25 376:20,21 partly 342:11,11 parts 302:14 patency 370:23 path 339:17 pathways 338:18 365:9,10,18 patient 302:10 335:7 357:22,23 367:25 patient's 371:21 patients 281:9,10,19,21 293:11 297:23 313:10 344:11,12 345:1 358:4 363:18 370:25 PCPC 250:2 348:5,17 PCPC-produced 349:10,20 350:9 Pecan 249:6 peer 282:21 341:11,15 341:18 344:3,7 pelvic 294:21 305:15,17 pen 258:2 penalty 375:5 376:6,22 Penninkilampi 282:3,4,7,11 283:4 283:22 Pennsylvania 377:4	people 281:16,17 314:8 355:22 percent 340:6,7 344:15 348:16 371:3,4 percentage 372:9,16 percentagewise 372:12 perfectly 374:4 performed 355:8,11 peri 286:9 perineal 251:17 266:17 270:14,19,22 271:5 273:12 283:15 285:13,19 287:5,16 302:20 303:1 330:7,10 372:3 perineum 286:21 362:22 363:5,7,9,20 364:12,17 370:18 371:8 372:7 period 339:18 peritoneal 325:25 peritoneum 286:9 perjury 375:5 376:7,22 person 332:11,23 333:3,5 person's 332:15 Personal 250:2 348:1,4 personally 307:10 perspective 314:12	pertained 366:4 Ph.D 253:18 319:5 Philadelphia 377:4 Philip 334:13 phone 258:16,20 phonetic 365:14 physical 288:13 291:18 physician 285:8 physiology 303:8 PID 307:4,15 piece 312:15 pieces 333:22 place 255:15 269:4 371:10 376:5 placed 372:9 places 274:15 plagued 275:2 plaintiffs 247:3,12,19 259:3 260:18 298:7,14 299:23 354:14 Plaintiffs' 354:23,23 355:2 372:24 373:9 plausibility 285:12 play 295:14 Plaza 247:16 377:3 please
---	--	--	--	---

253:19 256:24 262:14 299:19,21 316:5 324:16 327:13 347:7 plot 361:2 plug 343:21 point 263:11 279:6,7 280:12 291:11 297:24 310:25 335:9 344:2 361:3 361:5,11 362:12 366:13 pointed 272:4 308:12 points 312:3 327:1 Policies 334:14 pooled 279:20,23 280:3,10 361:25 362:4 pooling 274:4 344:24 population 275:25 276:23 278:6,7 281:15,21 311:12 346:15 population-based 276:3,24 277:17 278:9 279:11,17 279:18,21 280:3 280:21 281:5,25 311:16 populations 280:10 329:15 335:7 position 304:12 positive 278:3 311:3 328:10 329:10 361:18 possibility 276:1 possible	272:20 274:4 279:9 283:3 306:10,13 possibly 306:22 357:23 postop 313:10 370:25 371:2 potential 274:8,8 293:14 324:3 360:19 potentially 281:1 powder 245:7 253:13 259:21 268:3 269:20,24 271:8 271:15 274:8 275:21 285:13,19 285:23 286:18 287:5,15 290:8,12 290:22,25 291:1,8 292:4,11,13 293:4 293:8 294:20 307:13 313:11,15 313:19,23 314:1 314:17,20,25 315:5 316:7,19 318:15,19,19 320:5,7,10,12,18 321:2,6 322:6,11 322:16,20 323:7 323:20,22 330:22 339:11 340:1 343:19 346:6,10 346:16 352:16 354:25 355:9,18 357:25 358:1 360:21 361:1 362:25 365:22 366:1,4,5,20 367:8 369:18 372:3,7 377:6 power 323:15 powerful 266:3 practical	344:23 Practices 245:7 253:14 preclude 297:23 predecessors 348:5 predicter 265:12 preferable 293:18 preop 371:2 preparation 373:8,18 preparations 352:21 prepare 254:10,10 preparing 260:16 presence 303:18 306:1 present 268:8 306:14 334:9 352:16 presentation 356:17 presented 255:5 277:25 334:15 355:22 presenter 334:16 pressure 371:18,20 pretty 371:13 prevented 358:14 previous 295:12 356:8 primarily 312:11 314:13 331:18 333:23 358:23 359:23 primary 271:21 312:7	370:20 principles 335:21 prior 374:3 pro 302:7 303:13,15 365:4 366:11 probability 303:22,23 probably 258:10 263:17 322:7,8 332:16 371:12 problem 265:11 procedure 313:13 370:17 procedures 363:14 370:20,25 proceedings 376:4 process 282:22 291:4,5 342:7,19 processes 291:20 produced 254:25 255:2 product 257:2 269:24 290:13,22 291:10 292:14,15 293:4 293:14 314:5,5 346:7 production 255:7 products 245:7,7 250:2 253:13,14 268:3 290:8 292:4,11 293:8 313:11 314:9,10,14,17,21 314:25 315:5 320:7,10,12,18 321:2,6 322:6,11 322:16,21 323:7	323:22 343:20 346:10,16 348:2,4 352:17 355:18 357:25 358:1 361:2 367:8 professor 334:2,6,11 program 257:5 progression 294:3 336:21 proliferation 300:23 301:5 302:5 366:13 promotion 294:3 336:21 proper 284:17,21 proportion 292:3 proposition 294:9 prospective 274:17,20 protective 305:8 361:19 protein 300:22 protocol 373:24 prove 292:7 provide 262:3 354:24 provided 259:3 260:25 319:13 357:3 provides 301:18 357:12 proximity 287:22 288:11 psoriasis 290:5 psychometrically 272:9 PTI 250:14,14
--	--	---	---	--

Public 377:25 publication 257:14 353:22 publications 289:12 299:10 305:11 320:1 publish 319:21,25 356:11 356:25 published 255:25 263:22 264:11 284:4 290:17 294:19 298:5 306:23 307:13 310:23 315:15 332:25 355:24 356:4,13 356:20 publishing 334:9 purpose 315:14 purposes 348:3 349:8 put 276:19 349:13,15 352:9 360:23 364:12 367:24,24 371:7,8 putting 274:10 350:15 363:15 370:18,21 371:18 373:25	267:20 322:15 323:16 quantifying 312:6 quantitative 336:1 quantity 302:15 question 259:17,19 263:6 264:6,8,20 265:10 273:11,22,23 274:16 282:25 284:17 291:21 293:2,17 299:19 299:22 301:9 302:13 304:14 305:19 310:13 316:8,12 321:9 332:2 333:11 335:10,25 336:10 338:4 339:22 340:25 342:15 346:7 349:7,16 362:20 363:3 368:13 370:4 questions 266:1,5 273:14,15 324:15 330:25,25 331:23 346:25 347:5 354:17 355:7 360:16 361:23,25 373:3 quick 280:8 quick-and-dirty 278:16 quite 256:2 304:14 324:7 358:6 366:20 quoting 264:17 268:20 329:19	334:14 race 372:12 radiation 302:1,3 370:11 radioactive 364:5 radiologist 333:16,23 363:13 radiology 334:12 raise 256:23 range 280:5 307:8 311:5 rarely 263:5 264:5 rates 329:23 ratio 279:20,23 280:3,10 310:10,17 311:5,6 311:7 362:1 ratios 282:18,24 309:24 310:3,24 re-ask 299:20 reach 319:22 333:8 reached 355:10 reactive 303:7 read 266:6 295:16 297:16 352:22 353:3,13,19,22 360:2 375:5 reading 263:25 264:18,19 289:4 300:21 329:18 339:4,5 ready 344:2 real 263:24 264:13,13	264:17,25 really 308:12,13 332:7 365:15 366:20 reason 263:24 264:14,18 268:5 271:21 300:25 371:6 372:14 reasons 325:22 Rebecca 245:14 246:5 251:3 253:17 254:1 319:5 375:4,14 377:21 recall 273:6 274:21 275:4 275:8,18,25 349:19 351:10 received 319:16 recognize 266:21 324:25 record 253:6 276:19 318:25 319:4 331:1,4,8 347:2 347:15,19 354:9 354:13 368:12 369:1,5 373:16,21 374:8 recorded 259:24 376:9 recruited 280:11 281:7 rectal 287:18 288:17,21 rectum 288:5,7 reduce 295:25 296:14 reduced 346:17,21 reduction 346:2,11 365:5,6 Rees	249:13 reference 309:1 348:4,9,9,13 348:17 351:1,5 361:24 365:12,12 references 298:2 365:13,13,14 365:14,15,17,17 365:17 reflect 284:9 reflection 277:25 refused 376:17 regard 283:16 344:11 365:22 regarding 294:16 354:24 357:2 373:4 region 285:19 287:16 302:21 330:8,11 372:4 regular 266:15,17 272:4,8 272:18 273:12 290:8 312:20,23 343:19,24 355:8 369:25 regularly 369:18 regulation 366:9,9,11,12 Reid 324:10,17 325:5 related 275:6 304:9 313:12 relates 285:12 326:18 relating 264:4 285:1 362:19 Relation 294:21 relationship 269:20 270:14
<hr/> Q <hr/> quality 282:17 quantifiable 335:13 quantification 302:10 312:12 quantified 296:21 quantifies 290:16 quantify	<hr/> R <hr/> R 247:21 250:4 297:2			

271:4,7 275:20	291:19	282:11 293:19	315:21	324:12 341:11,15
288:3 293:15	repair	315:8,13,14,22,24	response	341:18 351:21
306:2 321:19	303:24 358:14	316:4,6,14,16	304:9 367:6	365:21
324:3 325:17	repeated	318:17 321:20	responses	reviewing
335:12 360:25	353:12,15,16	353:16	294:5 336:23	260:15
relative	replicate	represent	rest	reviews
309:4,22 340:14,15	356:3 357:4,14	331:13	331:21	312:18 355:14
341:4 362:13	replicated	represents	result	357:13
376:19	355:24	348:1	274:11 287:12	Rheumatoid
relatively	replication	reproduce	288:16 294:5	290:1
281:25 311:4	356:9	291:19	336:23 344:25	right
362:14,16	report	reproductive	360:6,20	257:11,15 258:2
relevance	254:13 256:5,15	285:20 287:11	results	259:14,16 260:5,8
367:14	257:7,22 261:23	293:22 334:7	271:22 273:18,21	261:16 262:21
relevant	262:7,10 264:19	370:15	274:5 275:9 279:9	265:12,17 266:4,9
302:4 311:13	266:13 267:19	requested	292:6 295:12,17	266:19 267:9,12
reliability	268:1 271:11	300:3 316:2 376:16	297:21 301:21	267:15 268:10
272:10,12 282:25	272:4,17 273:5,8	require	306:6 308:3	269:7,14,22 270:4
reliable	275:13 287:4	356:18,19	316:15,18,22	270:9,11,16 271:9
335:17 336:6	290:7 294:1,8	required	319:21,25 355:16	271:12 272:25
reliance	295:20 298:9	292:14 311:22	355:21 356:7,17	273:21 274:18
294:24 297:1	307:22 312:25	322:25 353:8	357:10,12 360:2	275:11,16 276:4
353:23	315:16 318:14	354:3	362:7 366:4 367:2	276:18 277:1,22
relied	319:19,20 322:18	requirement	367:11 370:6	278:2,12 280:17
350:10 351:10,24	336:20 341:20	343:18	retrograde	281:10,17 282:5,8
351:25	343:24 344:2,6	requirements	363:24 371:11	283:1 284:1,5,10
relief	346:11 348:10	312:13 354:3	retrospective	284:19 285:2,21
313:11	349:9 352:10	research	274:18,21,24	287:13 288:18,22
rely	353:17 356:21	279:6 294:16,18	275:19	289:20 290:5
348:23 349:10	357:2,20 358:22	298:16 302:6	review	292:16 294:25
351:18,21 353:10	359:8,14,16 360:1	324:2 333:10,16	254:15 265:9,17	295:16,23 296:1
relying	362:13	338:12 350:22	266:11,12 270:3	296:15 297:2,16
362:24 364:22	reported	365:22 368:5,9,10	282:21 284:9,18	297:25 298:10
remember	245:23 256:10	368:14	284:22 289:1,7	299:13,16 300:7
255:4 272:6 275:10	267:1 268:2	researcher	297:16 311:2,18	305:22,24 306:4,7
283:9 307:19	278:10 339:25	331:18	312:5,15,17	306:19 307:14
324:9 325:10	343:10 352:18	researching	323:12 324:6,10	309:5,15,23 310:2
327:5,7 332:12	reporter	333:7	324:21,22 325:4	313:1,14 314:18
345:22,25 350:4,6	246:11 253:23	residual	329:3 342:21	315:8,11,15
350:20,20 351:6	256:23 299:2,15	306:9	343:18 344:3,7	316:11 317:17
351:19 352:3,7	299:17,18 304:18	respect	345:19,21,21	318:5,12,16,22
370:5	308:5 319:24	261:23 311:18	355:8,12 356:12	320:11 325:9,15
reminded	366:10,15,17	319:19,20 321:16	357:11 376:15	326:2,21,24 327:4
332:19	367:19 376:2	330:15	reviewed	327:8 328:7 329:6
remove	reporting	respective	254:13 265:9 292:1	329:17 341:5
353:6	282:18,23	374:1	296:19 298:9,11	345:4,6 361:8
removed	reports	responded	299:9 311:21	right-hand

325:12 rights 374:4 risk 251:17 273:13 275:12,14,23 279:1 290:3 293:9 293:16 294:22 296:5,14 308:4,6 309:4,22 327:2 328:2 329:16 330:8,11 333:17 340:14,15 341:6 346:9,11,17 357:20,24 358:4 358:12,16 360:20 361:4,6 362:3,13 369:10,25 370:10 risk-benefit 293:15 risks 333:24 Robinson 247:13 role 295:14 route 286:14 359:19 Royston 250:14 run 343:14	Sales 245:7 253:13 sample 256:9 samples 318:19 San 245:15 246:8 249:8 253:1,11 sand 286:1,2 sanitary 271:8 satisfied 344:9 saw 300:16 saying 265:5 308:21 311:2 330:4 361:4,5 says 269:2 283:22 304:5 304:8 328:22 329:20,21 sciences 334:7 scientific 275:5 356:23 368:5 368:14 scientist 285:8 298:16 Scott 259:9,10 scribble 255:15 scribbled 255:14 search 332:14,16 second 276:22 307:23 317:25 318:1,6,7 318:8,8 327:24 328:6,19,21 335:3 340:11,18 section 294:12 336:9	see 263:8 290:10 294:6 298:2 308:25 313:5 316:22 318:4 327:6 328:4 328:17 339:3,5 345:24 348:18 365:1,2,4,5 370:18 371:9 seeing 297:3 351:19 352:5 352:7 seen 307:17 316:1,9,14 316:15,16,17 317:14 325:8 364:6,7 selecting 281:19,19 selection 274:24 275:2 280:16,21 self-regulate 353:5 sense 303:22 355:23 361:14 364:17 sensitive 302:14 344:25 sensitivity 302:16 343:23 sent 261:14 sentence 297:20 308:10 312:4 318:10 328:21 336:24 345:9 353:11,12 series 294:4 336:23 serous 323:13,17 service 318:3 Services 253:7 318:2 377:2 serving	354:19 session 255:18 259:2 320:4 372:25 373:1 set 266:12 311:21 342:17 357:9 376:5 setting 314:8 342:15 365:11 settled 338:4,7,10 several-fold 363:13 Seyfarth 250:3 shape 341:11 shared 257:3,9,11 Shaw 250:3 Shawn 365:14 SHEET 377:1 shift 256:4 310:22 shifted 278:2 shifts 256:9 short 263:17 270:2 354:6 shorthand 246:11 376:2,12 show 269:19 276:7,12 277:8,20 278:25 288:15,20 297:7 318:17 349:4,12 showed 255:25 366:19 367:1,2,3,3,6,7 showing 302:18,24	shown 255:22 279:12 283:15 364:5 shows 279:4 287:10 362:7 shrift 263:17 Shukla 365:16 367:3 sick 281:20 side 325:12 sign 292:23 significance 277:21 278:1,6,11 278:17,19,21,25 279:5 significant 269:20,25 270:14 271:4,7 275:20 276:7 277:8 328:10 329:10 360:3 362:3,11,15 silicate 321:25 Simes 246:7 similar 283:16 362:15,16 362:17 simple 320:8 single 263:6 264:5 sit 264:11 six 277:6 321:4,10 size 256:9 Skadden 248:15 skew 344:18 skiing
<hr/> S S 366:16,16 Saed 298:9,10,13 299:11 299:22 300:1,4,6 300:12,18 302:19 302:25 365:13 366:3 Saed's 301:21 365:21,25 safe 283:16 292:8 293:5 320:7,9,12,17				

331:17,22 skill 334:10 skin 274:9 Slate 248:15 slight 256:4 slightly 256:9 278:13 small 292:2,6,6 309:4,22 310:4,7,11 324:4 325:23 326:6,13 Smith-Bindman 245:14 246:6 251:3 253:17 254:1,9 264:10 319:5,7 347:22 354:16 360:10 368:12 372:23 373:6,17 374:2 375:4,14 377:21 Smith-Bindman's 360:1 373:14 smoke 340:19 smoking 340:12,14 Snips 366:15 SNPS 366:13,16 software 257:4 357:8 sorry 259:17 262:1 264:21 270:25 317:22,23 325:10 325:10 328:5,14 341:14 346:20 347:2,6 sort 263:1,20 278:15 280:8 286:23 294:12 321:3	335:22 356:23 357:13 365:18 367:21 370:6 sound 260:8 source 345:15 sources 284:18 344:24 South 248:7 250:18 sparse 297:20 speak 255:10 360:19 373:17 speaking 254:20 370:9 species 303:7 specific 264:3 283:24 362:19,20 specifically 283:5 325:25 351:24 360:13 364:20 366:3,4,8 specified 257:4 specimens 318:20 spent 260:14 sperm 364:1,3,3 372:9,16 sphincters 288:1,6 spill 363:17 Spitzer 247:20 split 373:5 spoke 370:14 spoken 300:1	spreadsheets 357:3 Square 248:18 St 250:20 stable 310:24 323:6 standard 256:8 standards 353:21 start 259:2 333:10 337:15 356:3 starting 361:24 starts 345:7 state 263:5 285:1 294:2 297:20 311:12 328:1,9 329:9 375:11 376:2 stated 333:15 statement 263:2 264:3 273:20 283:24 294:6 304:12 313:8 336:19 337:11 346:1,5 359:6 statements 262:19,24 states 245:2 253:15 263:23 264:12 283:5 291:12,22 statistical 277:20,25 278:5,11 278:16,19,21,25 279:5 280:9 323:15 statistically 269:19 270:13 271:4,6 275:20 276:7 277:8 362:2	362:10 stenographically 376:9 stenosis 371:4 step 356:24 stimulated 302:11 stratified 370:6 Street 246:8 247:8 248:7 249:6 250:6,18 253:11 377:3 strength 334:22 339:23 340:4 stress 303:11,18 304:2,9 304:22 305:4,5,9 305:12,15,16 358:13,14 366:8 strike 261:6 271:5 306:12 315:18 318:3 326:14 356:2 373:13 strong 265:19 288:3 311:3 315:4 334:25 339:13 340:13 360:4 stronger 339:25 strongest 321:18 strongly 271:20 366:24 structures 371:2 struggling 255:23 studied 306:3 314:6,9,14 369:12 studies	260:15 262:21 263:4,7,23 264:4 264:12,24 265:6,8 265:15,19 271:23 272:23 274:17,20 274:21,24 275:1 275:15,15,19,22 276:3,7,25 277:1 277:4,6,8,13,15 277:18,20 278:7,9 278:22 279:11,12 279:15,18,21,23 280:3,6,20,22,25 281:8,15 282:3 284:4,8,19,23 286:7,17,24,25 287:3 288:15,19 288:20 295:12 306:7 307:14,24 308:14,22 311:20 311:21 312:11 321:22,22,23 322:1 324:9,19 325:20 326:17 327:3 330:9,14 334:14 336:4,7 341:10,10 342:8,8 342:12,20 343:9 343:17,20,23 344:10 346:9 350:22 351:9,15 351:21 353:15 355:17 359:23 360:6,17,23 361:7 361:18,20 362:1,5 362:7,10,18 364:1 367:22 369:15,24 study 257:14 263:13,14 263:21 265:11,16 265:19,21,22 266:4,9,19 267:7 267:9,15,18,21,23 268:7,9,20 269:6 269:9,11,11 270:2 270:4,7,9 271:1 273:10 278:24
---	---	---	--	---

279:4 282:8,16 283:1,5 284:5 291:11 300:6 302:19 303:1 304:5,8 306:10,14 306:19 307:18 308:21 309:1 320:22 324:11 325:3 327:1 335:6 341:24 343:10 345:5,16 356:25 361:14 362:21 363:4 364:5,11,13 364:14,15 369:21 subject 258:24 274:20,23 335:17 336:7 338:12 submit 320:2 344:6 353:8 submitted 259:23 344:3 Subscribed 377:22 substance 305:3,5 substances 285:24 303:10 substantial 330:1 356:22 360:7 366:19 substantially 361:21 subtypes 321:10 sufficient 266:10 357:1 suggest 278:19,20 295:13 296:20 370:13 suggesting 279:25 280:14 suggestion 286:13 suggests 292:10 Suite	246:8 247:24 249:7 249:17 250:19 253:11 summarize 296:22 summary 280:9 308:1 312:16 321:18 323:9 344:25 superior 293:7 supervision 376:10 support 294:8 311:14 313:7 362:25 364:23 365:25 supported 298:16 337:11 338:8,9 supporting 294:13 supports 290:17 304:11 345:13 357:13 supposed 287:1 sure 255:2 268:22,24 270:24 274:5 276:9 280:13 283:11 284:13 289:5 292:19 295:3 298:20,23 304:14 305:19 307:5 308:12 317:5 328:15 331:12 334:3 335:19 344:15 346:23 349:6 350:16,19,25 351:2 359:18 368:11,15 370:7 surface 274:9 surgical 291:17,17 313:12	surprised 256:2 survey 318:3 337:1,5,13 337:16,20 susceptible 280:20 289:16 swear 253:23 sworn 254:2 377:22 symptoms 313:12 synergistic 358:6,18 369:9,16 369:24 synergy 370:10 system 363:11,17,21,23 364:8,9 370:15,16 systematic 265:16 266:11,12 270:3 284:3,9,17 284:21 311:2,18 312:14,17,18 313:11 324:21,22 342:21 355:7,12 355:14 356:12 357:12 <hr/> T <hr/> T 297:2 table 361:8 362:6,6 Tachibana 251:24 261:13,18 319:8,19 take 260:1 276:10 302:6 312:25 317:20 318:22 327:23 329:15 331:21 354:6 368:23 373:14 taken	246:6 278:5 286:18 310:25 319:1 331:5 347:16 354:10 369:2 376:4,12 takes 322:13 talc 251:17,22 266:17 266:22 268:2 270:14,16,19,22 271:5,16 273:12 275:10 276:8 283:6,15,23,25 287:12,17 288:4 288:16,21 292:4 293:7,20 302:12 302:20 303:1 313:3 314:7,15 322:6 329:24 330:7,10,17 332:8 345:7,11 352:21 358:25 359:20 362:21 364:12 365:10 367:8 369:25 372:15 talcum 245:6 253:13 259:21 269:20,24 271:7,15 274:8 275:21 285:13,19 285:23 286:18 287:5,15 290:8,12 290:22,25,25 291:8 292:11,13 293:4,8 294:20 307:13 313:11,15 313:19,23 314:1 314:17,20,25 315:5 316:7,18 318:15,19 320:5,7 320:10,12,17 321:2,6 322:11 323:7,20,22 339:11 343:19 346:6,16 352:16 354:25 355:9,18	357:25 358:1 360:21 361:1 362:25 365:22 366:19 369:18 372:3,7 377:6 talk 258:25 263:3 307:21 309:1 328:7 335:25 338:16 359:21 363:22 364:19 365:18 talked 254:18 260:16 272:3 276:13 282:4 307:12,18 311:25 322:18 336:24 talking 309:6 346:8 talks 269:6 335:21 363:4 target 345:14 teach 335:14,18 teal 258:9 tell 268:5 280:1 283:10 293:1 295:1,8 332:14 333:2 349:2 tells 302:13 temporality 313:1 ten 278:20 tends 291:3 term 305:22,25 terms 272:21 293:14,16 296:13 302:4 342:12,15
--	---	--	---	---

Terry 257:13,14 tested 272:9 318:16 testified 254:4 300:13,18 356:12 testify 254:2 testimony 333:19 359:11 373:14 375:8 376:7,13 testing 316:15,17,18,21 317:13,16 318:20 353:8 Texas 249:8,18 text 336:3,6 textbook 263:18 335:18 textbooks 335:16 363:22 Thank 260:22 262:6 264:7 276:20 297:12 317:12 318:11 327:18,21 331:15 346:25 368:22 thankfully 303:24 Thanks 317:24 366:18 theoretical 275:12,23 theoretically 344:20 theories 354:24 thing 310:15,16 things 254:13 280:1 296:8 302:5 356:21 365:11	think 254:21 255:6,14 256:18 258:10 259:22 260:23 261:17,20 264:24 265:8 266:2,3 272:1 274:7,15 278:20 280:25 281:11 283:23 287:22 292:5,18 293:17 294:11,13 299:5,6 303:12,21 307:15 309:13 310:13,21,25 311:9,16 312:7 313:9 314:8 316:9 320:9 321:4,5 323:6,13,16 324:6 324:20 326:11,11 332:13 333:5 334:10 338:10,15 339:13,14,21 340:14,18,18,19 340:21 344:20 357:11,14 358:4 364:9,12,16 367:11 373:20 thinking 304:13 thinks 334:16 THOMPSON 247:6 thought 266:15 311:22 312:9 341:6 thousand 268:10 269:17,17 three 269:18 272:19 347:5 threshold 290:19 292:13 time 253:8 254:11,18,20 258:23 305:20 317:4 318:24	331:3,7,16,20 344:2 347:14,18 350:22 354:8,12 368:25 369:4 374:7,9 376:5,6,8 times 248:18 272:19 344:12,17 TINSLEY 250:16 tiny 364:4 tissue 274:10 288:9,13 294:4 303:19,20 305:4,9 330:16 336:22 345:12,13 tissues 287:19 288:18 305:6 title 295:1 today 259:2 260:14 267:4 331:14 today's 253:8 372:25 Toilet 286:4 told 257:19 topic 263:13 266:7 topics 263:16 toss 360:24 total 260:7 261:1 toxic 338:25 340:11,13 trace 313:19 320:11,14 330:17 track 264:1 tract	285:20 287:11 293:22 transcribed 376:10 transcript 259:12 261:3 276:16 297:11 317:10 319:11 324:24 327:17 375:6 376:12,15 376:17 transcription 342:25 transition 364:19 translation 367:23 transport 363:4 travel 287:1 traveling 362:22 travels 285:19 treatment 313:4 tried 272:18 296:22 trivial 311:1 true 270:6 274:22 296:11 315:1 346:6,14 375:9 376:11,23 truly 312:20 truth 254:3,3,3 279:6 280:4,5 try 332:22 344:21 368:2 trying 298:2 302:22 351:2 tubal	346:3,12,20 tube 371:8 tubes 287:6 363:16 370:22 371:7 Tucker 248:4 250:15 tumor 329:13 turn 297:13 345:4 348:8 348:12 360:10,13 turned 300:19 turnover 301:2 365:6 turns 370:24 twice 358:8 two 254:13,22 260:25 279:14 299:10 307:16 318:18,20 325:21 340:9 342:5 347:4 373:6 two-page 260:25 type 269:21 280:10 288:2 289:23 308:1,20 321:2,8 321:16,25 323:3 types 273:5,17 305:6 321:16 <hr/> U <hr/> UCSF 251:24 368:19 ultrasound 371:16 unavoidable 308:1,20 undergoing 300:14 313:4
--	---	---	--	--

underlying 284:8,23 301:2 311:20	339:11 340:1 343:19,24 355:8 360:21 366:24	273:5,17 Verdooldt 297:1	wait 299:15,19 367:19	well-done 355:14
understand 255:23 266:16 267:20 274:4 302:3,7 341:22 365:9 368:2	368:4,13 369:25 372:3,6	verify 261:5 282:10	waive 253:20	well-known 263:20
understanding 318:18 321:13,14 333:9 353:7 354:18 368:8 373:10	users 271:16 330:17	version 262:9 335:22 356:13	want 265:18 274:2 281:4 299:7 303:4 310:9 310:21 312:14 326:5 345:2 347:10 348:8 371:7	well-respected 298:15 336:15
understands 365:1	uses 265:22 357:24	versus 280:13 301:3 310:18,19 362:8 362:14 367:24	Washington 250:7	went 366:24
understood 325:19,19 332:2	usual 255:14	video 253:10	wasn't 344:15	weren't 256:2
undertake 323:23	usually 371:14,23	videographer 250:23 253:5,7,22 318:24 319:3 331:3,7 347:8,10 347:14,18 354:8 354:12 368:25 369:4 374:7	watch 363:16	whatsoever 364:18
unfortunately 364:13	uterine 287:18 288:17,22	videotaped 245:13 246:5	watched 286:24	whichever 309:8 334:15
Union 250:14	uterus 363:16 370:22	view 265:15 338:9	water 370:22 371:15,18	wide 338:8
United 245:2 253:15	<hr/> V <hr/>	views 293:13 359:25	way 257:6 258:20 267:19,24 268:1,8 272:13,16 278:16 278:18 279:25 287:2 301:8 322:14,17 330:7 334:10 341:11 348:16 366:18 371:9 372:2	wide-open 363:17,21 364:8 370:16
unknown 306:18	vagina 288:6 363:10,15 364:17 371:7,19 372:10,15	violated 373:10	ways 332:21	widely 294:2 336:20 337:2 337:11 338:7,8,8
unmeasured 306:13	vaginal 274:12 287:18 288:17,22	virus 300:13 338:22 339:24 341:1	We'll 262:5	Wilentz 247:20
unrestrained 300:23	vague 268:3 312:8	valid 301:13 311:9,9,13	we're 258:24 262:2 350:23 370:21 371:13,14	withdraw 267:6 295:21
use 251:17,20 262:8 266:15,17 268:4 269:20,25 270:14 270:19,22 271:5,7 271:11,12,14,18 271:19,24,24 272:4,8,18,18 273:6,17 276:8 283:6,15,17,25 285:13 288:16,21 290:18 292:7 296:4,13 297:22 301:21 302:20 303:2 313:3,10 330:7,10 335:18	validity 272:10	vitro 300:14 365:23	witness 251:2 253:24 373:9 373:11 374:1 376:6,7,16	witnesses 374:1
	value 293:16 361:21	voice 256:24	well-described 338:18	woman 269:2 293:10
	values 310:15	Volume 245:17 246:6 251:4 253:18 254:1 319:6 375:15 377:21		women 268:10,23 269:7,9 269:11,17,17 270:11,15,18,21 271:14 275:9,10 287:12 290:9,18 292:3,7 296:4 303:1 313:3 322:11 326:9 329:24 330:4,7,10 332:13 346:6,15 360:7 363:14 369:17 371:3
	variable 267:19	voluntarily 352:18 353:1,20,25		
	variety 307:25 308:17	vulvar 287:18 288:17,21		
	various	<hr/> W <hr/>		

372:3,6 women's 270:8 285:20 293:9 293:22 370:18 372:9 Woodbridge 247:23,25 word 283:23 345:7 words 352:24 360:19 work 257:1 260:15 261:7 261:22,24 284:4 301:25 319:18 331:16,19,20 336:13 342:25 343:5 344:7 354:17 355:3,24 357:4 365:25 370:9 worked 254:14 worse 358:7,9 worst 281:23 wouldn't 274:10 291:7 292:7 326:12 329:23 335:25 writing 356:23 written 255:13 333:22 wrong 269:4 wrote 315:13 332:11 362:20 <hr/> X <hr/> XX 376:15 <hr/> Y <hr/> Yeah	260:4,22 268:18 273:1 282:14 295:1 309:25 312:1 324:21 329:5 347:6,11 year 271:25 299:10 years 269:12 270:19,21 271:12,15 335:20 yesterday 253:21 254:11,19 255:11,17 258:17 258:23 260:16 272:3 276:13 277:11 278:8 282:4 298:7 299:1 303:21 307:18 312:2 331:12 373:19 yesterday's 372:25 York 248:19,19 <hr/> Z <hr/> Zellers 248:5 251:6 253:20 254:6 255:8,10 256:19 257:1 260:20,24 261:4 262:5,7,16,18 264:2,8,20,22 270:7 272:14 273:4 275:4 276:18,21 277:3 277:14 279:10 283:4,11 284:16 285:10,18 286:15 287:3,9 288:25 289:8 290:21 291:6,21 293:6 294:1,15 296:12 297:13 298:20,24 299:9,16,20 301:20 302:17 303:6 304:11,24	307:11 308:6,8 309:8,13,16,17 310:8 311:5 313:22 314:22 315:7 316:2,5,11 316:17 317:5,7,11 317:22,25 318:22 319:7,12 320:3,16 321:1,12 322:9 324:10,25 326:14 326:16 327:8,19 327:23 330:6,24 336:25 347:3 356:1,6 357:6 358:3,21 359:3,7 359:24 366:2 368:7,16,23 372:20,22 373:5 374:6 <hr/> 0 <hr/> 0.92 280:6 07095-0958 247:25 <hr/> 1 <hr/> 1 259:14 276:22 277:5,19 278:11 279:13 319:1 325:23 360:14 361:3 1,500 261:17 1,700 261:25 1.0 310:10,19 311:6 1.12 280:13 1.19 309:4,22 311:6 1.2 310:10,19 311:7 1.29 280:4	1.3 340:15,20 1.38 309:4,22 311:6 1.4 280:13 1.52 280:4 1.63 280:6 1:16 331:5 10 247:24 270:21 271:12,15 371:3 374:4 10- 258:16 10-15 255:12 10/18 251:24 10:47 318:24 319:1 100 250:18 344:15 10036 248:19 101 263:1 108,870 269:7 109,000 268:21 11:00 319:2,3 11:16 331:3 11:17 331:5,7 11:37 347:14,16 11:40 347:17,18 11:45 354:8,10 112	249:6 12 294:1 336:20 12:15 354:11,12 12:34 368:25 369:2 12:41 369:3,4 12:48 246:10 374:7,9 1215 328:5 1216 327:24 13 259:15 260:2 13427 245:24 246:12 376:1 14 352:11 360:2 147 251:14 15 255:12 261:25 348:8 15-minute 258:16 1510 249:17 160 260:8,9,10 1650 377:3 17 257:23 262:9,14,15 262:16,18 263:3 264:4 275:13 294:25 1700 246:8 253:11 174 295:7 1800 249:7 19
---	---	---	--	--

247:16 310:3 348:12 351:5 19103 377:4 1976 269:12 352:19 1992 328:7 329:8	2018 259:15 260:2 282:5 282:7 283:4 298:9 2019 245:16 246:10 253:2,8 298:10,21 376:24 377:23 202-828-5356 250:9 21 273:7 210-554-5549 249:10 212-735-2453 248:21 213-430-3301 248:11 218 247:8 221,000 269:2 25 260:23 307:21 328:5 250 246:8 253:11 254 251:6 259 251:12 26 308:25 309:10,19 311:11 261 251:14 27 311:11 2738 245:9 276 251:17 28 251:12 259:6,11 260:3 29 251:14 261:2,5 297	251:20 3 3 256:15 266:13 3,000 261:1 30 251:17 269:12 276:14,15 360:11 300 340:14 31 251:20 297:9,10 317 251:22 319 251:24 32 251:22 317:8,9 324 252:2 327 252:4 33 251:24 257:25 319:9,10 331 251:9 334-269-2343 247:11 34 252:2 257:25 324:18,23 325:1,3 347 251:8 35 252:4 327:15,16 345:5 354 251:7 36103 247:9 369 251:9 372 251:6	39 312:25 4 248:18 4.5 311:7 4.7 310:18 311:7 4.9 310:18 41 290:7 42 283:13 42nd 248:8 47 268:19 4th 250:18 5 5 297:14,19 50,000 322:19 500 340:7 512-391-0197 249:20 515 248:7 51st 377:3 6 6/1/17 251:12 600 250:19 61,000 270:11 63102 250:20	 7 75 348:16 78205 249:8 78701 249:18 8 8 245:16 246:10 253:2,8 816 249:16 877-370-3377 377:5 9 9:26 246:9 253:3,9 90 247:23 900 247:24 90071 248:9 924 269:2 92660 247:17 94111 246:9 975 250:6
---	---	---	---	---